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The JOURNAL presents herein the

Addresses of President Frankel and President-Elect Rankin

AT NEW ORLEANS.

IN THE DECEMBER ISSUE LOOK FOR THE

Sterling Communication of Sir Arthur Newsholme

The Papers Focussing on Federal Health Co-ordination

And Others of the Gems of the Annual Meeting

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PRESIDENTIAL ADDRESS OF LEE K. FRANKEL, PH. D.

PRESENTED TO THE ANNUAL MEETING OF THE AMERICAN PUBLIC HEALTH ASSOCIATION, NEW ORLEANS, LA., OCTOBER 27TH, 1919.

Ladies and Gentlemen:

In the address which I had the honor of delivering before you at the last annual meeting, on the subject of the future of the Association, I took occasion to speak of the physical condition of our society and dwelt upon the need of increasing its financial resources. I called attention to the fact that the Association had long since outgrown its swaddling clothes and that if it were to attain its position as the premier health association in the United States and, in fact of the American continent, it was necessary that it should be established upon a firm financial footing so as to enlarge its activities and to carry forward the message of health conservation.

I stated in this address that the Association should have a minimum income of fifty thousand dollars per annum in order to properly conduct its work. It is with no sense of disappointment that I call your attention to the fact that our income for the last fiscal year was very nearly thirty-four thousand dollars. This is an increase of nearly twelve thousand dollars over the preceding year and indicates most convincingly that, with a continued determined effort on the part of the members, we can very shortly attain the goal which we set out for last year. Instead of being dispirited or discouraged at the result of our efforts I am, as a matter of fact, very highly encouraged at the enthusiastic coöperation which we have received from all sides during the past year in our efforts to increase our membership and to bring the Association prominently before the public. It is with great delight that I mention the fact that the total number of members of the Association and subscribers to the JOURNAL is, at the present moment, well above the forty-five hundred mark. Since the intensive campaign which we began in March last for new members, we have succeeded in enrolling upwards of thirteen hundred new members, and the end is not yet. There is every likelihood that if the membership campaign is continued during the coming year the society should readily pass the six thousand mark.

Practically for the first time in its history, the Association is self-sustaining and ends the year with a handsome surplus of over five thousand dollars. This has been accomplished notwithstanding the fact that your Board of Directors authorized largely increased expenditure along the lines of the program which we mapped out for ourselves several years ago. The outgo of the Association for the year 1918–1919 was over thirty thousand dollars as compared with six-

teen thousand seven hundred dollars for the year 1917–1918. I am confident that year by year the Association will continue to grow in the number of its adherents and in the efficacy of the work which it may accomplish.

The financial statement measures only in a minor way the accomplishments of the Association during the past year. It may be said without making any invidious distinctions that the coöperation of officers, directors and committees has been whole-hearted and continuing. Whether the influenza epidemic or the war brought about these results, it is difficult to say. In all fairness, however, it should be stated that an unusual amount of interest has been evinced in the Association by all who are connected with it. There seems to be a united impulse on the part of members to consider the Association as their Association and to place it in the foremost rank of nation-wide health activities.

Before passing on to the more important phases of the Association's work, may I add one word more on the financial side. In addition to attempting to obtain regular members, a beginning was made during the past year to obtain sustaining members paying $50 per annum. A limited number of appeals was sent to financiers, representative business men and manufacturers who, it was thought, would be interested in the development of modern health work in their respective communities, with the request that they become sustaining members of the Association. The results have been all that could be expected. I have no doubt that if this campaign be actively continued we shall within a very short period be able to secure at least five hundred sustaining members for the Association. This alone would give an income of twenty-five thousand dollars per annum. If each member of the Association would take this matter to heart and endeavor to obtain one sustaining member, we need not in the future worry about our financial status.

Corporate Memberships.

The efforts made last year to increase corporate memberships have been continued. In this direction the insurance companies and fraternal orders have been constantly canvassed through the mail and by personal appeals at their meetings and conventions. While the results obtained during the past year have not been pronounced, they are quite satisfactory and indicate clearly that when the Association is in a position to offer something to the fraternal orders and to insurance companies which will be of special interest to them, their further coöperation and financial support may be counted upon. It might be well for the Program Committee next year to consider the desirability of giving space on the program to a consideration of the special health problems which affect insurance and fraternal interests and possibly even to organize a section which they might be invited to join.

I shall leave for the secretary's report and for the various business meetings of the Association, a detailed statement of the many things which have been done by your officers in promoting the Association's manifold activities. This report will include such matters as the publication of the News Letter, a proposed health syllabus, the work done by special committees on cantonments, model health legislation, the health of the foreign-born and public health education. It will include as well a statement regarding the possibility of publishing a popular health magazine of which mention was made at the last annual meeting. All of these matters are of extreme interest and should be given the most careful con-

sideration by this body. Rather than go into any prolonged discussion of these subjects at this time, I would prefer, with your permission, to consider with you some of the larger problems of health which confront the Association and in which it must be in a position to give help and assistance.

State Health Societies.

Nothing more clearly indicates the renewed interest in the Association's work than the results which have been obtained during the past year in organizing state health associations. There will probably be at this meeting representatives of such associations. Under the provisions of the constitution, they are privileged to elect members to the Board of Directors. In the opinion of the Board of Directors, it was deemed desirable to let each of these new state groups organize themselves along the lines which they considered best and for the present not to limit the type of organization in any way. It will probably be desirable at this meeting to appoint a special committee on state associations who shall draft constitutions and by-laws under which in future these associations shall be affiliated with the parent association. In a number of instances, the state associations will act upon the suggestion made to them of including not merely the professional group but laymen as well. In due time these associations should become the nucleus of intensive propaganda for public health education. The union of public health officials with the laity working together for improvement of health conditions, for adequate appropriations, and for necessary legislation is highly to be desired and can readily be accomplished if in each state and subsequently in each community these joint organizations can be brought into existence.

National Health Council.

You will recall that at the last meeting of the Association, an admirable paper was presented by Dr. George E. Vincent on "Teamplay in Public Health Work." Doctor Vincent called attention in his address to the necessity for greater coördination of the various public and private agencies in the United States engaged in public health activities. As a result of his address the Board of Directors was authorized to call together representatives of various national health associations and to take up with them the question of better coördination. I am pleased to advise you that as a result of various meetings which have been held during the past year, the National Health Council has been formed. There are included in this council seventeen of the most representative national societies in the United States engaged in some phase of work relating to the improvement of the public health. They are the American Red Cross, American Child Hygiene Association, Child Health Organization, American Social Hygiene Association, American Pediatric Society, National Committee for Mental Hygiene, Conference of State and Provincial Health Boards, Association of Industrial Physicians and Surgeons, American Society for the Control of Cancer, National Housing Association, Life Extension Institute, National Organization for Public Health Nursing, National Safety Council, United States Public Health Service, American Public Health Association, National Tuberculosis Association, and National Child Welfare Association. At the last meeting which was held in New York in May, the president of your Association was appointed chairman of the council and was authorized to appoint a committee to prepare a constitution and by-laws. This committee it is hoped will present its report in the very near future. It is

quite likely that the newly formed organization will be actively at work during the coming winter. It is planned for the present that the council shall meet quarterly and to have continuous interchange of ideas in the interim, if necessary, through the employment of a paid secretary. The council marks a new development in public health work. I am sanguine enough to hope that its development will mean what Doctor Vincent so aptly called "teamplay" and that it may lead to the organization of new phases of health work as well as the elimination of unnecessary ones.

Legislation.

In line with its policy as a propagandist organization, your Board of Directors during the past year felt warranted in taking active participation in certain health legislation which came to its notice. Along this line your Executive Committee, at the request of the National Tuberculosis Association, authorized a communication to be sent to Congress in advocacy of the establishment of a Bureau of Tuberculosis in the United States Public Health Service. Certain of the officers and members have, in addition, made personal and written appeals to senators and representatives. A similar resolution, favoring an appropriation for the study of influenza was sent to the congressional committee having the matter in charge. Your president, with Dr. Josephine Baker, president of the American Child Hygiene Association, appeared before the congressional committee having under consideration a bill introduced by Congressman Jeannette Rankin for the protection of maternity and infancy, in opposition to a provision in the bill for the establishment of separate boards of maternal aid. We recommended that the act should be administered by legally constituted agencies of the states, viz., the state boards of health. The bill failed to pass. It is gratifying to report that in an amended bill which has recently been introduced into Congress, there have been incorporated the recommendations which were made by Doctor Baker and myself at the hearing above referred to. Your committee also favored the Lever Bill for the promotion of rural health. The bill called for an appropriation by the Federal government to be expended under state boards of health for the development of rural sanitation and hygiene. By direction of the Executive Committee, letters were addressed to state health officers throughout the country urging them to communicate with their representatives in Congress. This bill likewise failed to pass.

The American Red Cross.

One of the most significant developments of the past year is the determination on the part of the American Red Cross to enter the public health field. This determination has already found expression in the organization of a system of public health nurses in communities where such nursing effort has not already been established. The tentative plans of the American Red Cross call for an even more novel development based upon the creation of public health centers in which the various chapters of the Red Cross will be asked to function. The possibilities which lie behind the American Red Cross are incalculable. With its millions of members, its thousands of local chapters and with its ability to raise large sums of money from the general public, the Red Cross may well hope to carry on a campaign of education which will reach not only the large cities, but the smallest hamlets. It is a sign of the time that in its tentative plans, as outlined by its chief representative, the Red Cross feels the necessity of the closest contact with the

American Public Health Association. There is probably no other movement in which the need of obtaining the coöperation of the professional element is so necessary as it is in health work. The powers and duties which are vested in the health officer in every community make it impossible to undertake any campaign for the eradication of disease and the development of effective health administration without the coöperation, hearty support and guidance of the local, state or Federal health officers. Since the plans of the American Red Cross are still tentative, I would recommend the appointment of a special committee of the Association to confer with the officers of the Red Cross whenever the latter are prepared to give practical expression to their highly interesting plans.

Compulsory Sickness Insurance.

Another important development of the past few years, and in particular of the last year, has been the rapidly growing belief on the part of certain groups that the problem of sickness may be solved by a scheme of compulsory insurance. This development I feel has reached a point where it should be given consideration by the American Public Health Association.

Are the advocates of compulsory sickness insurance in the right? Can the problem of sickness be solved by the method of compulsion and insurance? To be able to answer these questions we must first understand what the sickness problem is. The following summary of the report of the Pennsylvania Sickness Insurance Commission is typical of similar reports from other states. There are constantly more than three hundred and eighty-five thousand employees in the state of Pennsylvania suffering from illness. Of these approximately one hundred and forty thousand are cases of severe sickness and two hundred and forty-five thousand are cases of less serious sickness. The average loss of working time among employees in the state is at least six days each year because of sickness. The death rates in Pennsylvania are higher than those for the registration area of the country as a whole. The infant death rate is highly excessive in many parts of the state. At the nominal rate of two dollars a day, the wage loss to employees of Pennsylvania every year, because of illness, is at least thirty-three million dollars. The average cost of medical care for every employee's family is between thirty and fifty dollars a year. Employees in the state lose at least sixteen million eight hundred thousand days' work annually because of sickness and large numbers of actually sick men and women are at work every day. The state spends over six million dollars every year directly for the treatment of sickness. In addition four million dollars is spent for the maintenance of institutions for the care of defectives, a large part of which expenditure is undoubtedly made necessary by the neglect of sickness and its consequences. One hundred and seventy-five hospitals reported to the State Board of Charities in 1916 that 75 per cent of their patients had been treated free and 40 per cent of their hospital days had been free days. Hospital accommodations in the state averaged little more than one-half the standard minimum of five beds per thousand of population. Even if good medical care were available and adequate, most employees could not afford to pay for it. Approximately one-fourth of those actually disabled by illness never received medical care and a larger percentage of those ill are still trying to work without attention. Fully one-half of existing sickness could be eliminated if proper preventive measures were taken. At present from 70 to 75 per cent of the

school children in Pennsylvania are physically defective and for the most part the defects are correctable, if treated in time. A large number of the communities in the state have no active health work, much less an adequate appropriation for health activities.

It will be seen from this report that there are three elemental factors which enter into the problem of sickness and its reduction.

First, the problem of preventable and communicable diseases.

Second, the problem of adequate medical care, and

Third, the problem of the compensation of wage earners against the wage losses caused by illness.

In any consideration of the subject, it is essential that these phases of the problem should be clearly kept in mind.

Let us consider the first two of these in their order. The problem of preventable and communicable disease is fundamentally a function of the health authorities. Sickness, like the law, is no respecter of persons. It is not limited to any particular group. The rich and the poor, the worker and the idler are its subjects. In its infectious and contagious forms, the menace which it carries necessitates entrusting its eradication to properly constituted health authorities. This function cannot be delegated to insurance committees or similar bodies by reason of the special powers which through law are vested in the health official and which must remain his if his work is to be effective and controlling. For this reason if for no other prevention of disease cannot be considered a phase of an insurance scheme. It should remain in the hands of legally authorized health administrators.

The question of adequate medical care is more involved and more difficult of solution. There can be no doubt that in practically every community there are many sick individuals, as shown in the Pennsylvania report, who obtain inadequate medical attention or none at all, and that there are thousands who are the beneficiaries of charitable medical service either from the individual practitioner, the hospital or the dispensary.

The state has in the past undertaken the care and cure of certain diseases, not as a matter of charity but in line with wise public policy. In most communities the treatment and care of smallpox patients has been taken out of the hands of the individual practitioner and put into those of the health official. The same is true of other epidemic and communicable diseases. More recently we have seen the principle extended to include the treatment and care by health officials of tuberculosis and the venereal diseases. In one state (North Carolina) clinics for the periodic examinations of citizens have been opened. In other states we find infant welfare clinics, maternity clinics and clinics for industrial diseases conducted under the auspices of the health authorities. These are not limited to the indigent but are for all classes. They resemble our public schools in that the latter are intended to prevent the perpetuation of ignorance and the former are fostered to prevent the perpetuation of disease.

What are the implications of the extension of this principle?

Will its extension, in time, place the treatment of a larger number of transmissible diseases in the hands of public health authorities? What changes in medical practice may be evolved in such extension? Whatever they may be, it must be sufficiently clear to all the members of the American Public Health Association that the subject requires the most careful and earnest consideration on the part of both the health officers and the medical profession. If this problem

is solved, the other phase of the sickness problem—compensation for wage loss—will gradually assume smaller proportions and can probably be handled either through insurance or in other ways. This last phase of sickness is an economic rather than a medical problem.

I cannot, in the limitations of this address, go into the interesting subject more extensively. I hope I have demonstrated that it vitally effects the members of the American Public Health Association. In this belief I would recommend the appointment of a special standing committee to study the subject.

Coördination of Federal Health Activities.

The most momentive development in the annals of health during the past year is unquestionably the creation of ministries of health in England and Canada. No one can doubt that the example set by these two countries will give impetus to a similar movement in the United States.

Efforts which have been made in the past in the United States for a Federal Department of Health have proved abortive. The campaign of the "Committee of One Hundred" was without results. The Owen Bill and similar bills have failed of passage. Several bills of the same purpose are before the present Congress. There are constitutional questions involved in the functions of such a department which still remain unsolved. Perplexing questions of state and federal rights must be considered. There are legal doubts as to whether under the constitution greater powers could be vested in a department of health than are now given to the Public Health Service. On the other hand, if a broad interpretation of these powers is not possible, there may well result, as President Goodnow has so clearly indicated, an amendment to the constitution under which larger powers would be given to some centralized health agency. Assuredly the public health is an asset of equal importance to commerce and agriculture and deserves equal recognition in our conception of government.

Whatever may be said as to the desirability or possibility of creating a Federal department of public health with a cabinet minister it cannot be gainsaid that there is need of better coördination of the various Federal bureaus dealing with the problem of the public health. Nothing possibly will better illustrate the defect in the present organization than the health bills introduced into the last session of Congress, some of which were adverted to above. The Rankin Bill for the creation of boards of maternal aid was sponsored by the Children's Bureau of the Department of Labor. The Lever Bill for the promotion of Rural Health was similar in purpose to the Rankin Bill but was more extensive in scope and included provision for general rural sanitation and hygiene in addition to general maternity and child care. This bill had the endorsement of representatives of the Public Health Service. Another bill introduced into Congress provided for a reorganization of the Bureau of Education to make it a Department of Education instead of a bureau and for the extension of the bureau's work, so as to enable it to engage not only in health education but to include phases of health administration and supervision which ordinarily are the functions of a health department. It is claimed that in the preparation of these bills and in their advocacy before Congress there was no coöperation between the bureaus involved. There are those here who will contend that this is putting it very mildly. There are probably others who will have no hesitation in stating that instead of coöperation in the Federal bureaus there has been the very

reverse and that the relations of the bureaus to one another result in confusion, waste of effort and disharmony in the development of a well coördinated health program.

The time has come, I believe, for the American Public Health Association to give earnest consideration to this important matter. If a concerted, unified, comprehensive Federal health program is to be evolved which should be a pattern for the states to follow; if we are to increase our national vitality; if we are to profit by the lessons of the draft, which showed only too glaringly our physical defects and our lack of provision to prevent them; if we are to avoid premature decay and unnecessary death; if we are to develop a people which shall be virile, strong, competent and efficient, then we must have a centralized, coördinated, progressive Federal health agency under competent leadership, and with adequate staff and ample financial resources. Such a centralized agency must replace our present anachronistic system, under which responsibility for the preservation of the people's health is vested in various departments of the Federal government unrelated to one another, and which results in duplication of effort, overlapping of work and corresponding waste and inefficiency. It is immaterial for our present purposes whether centralization be effected through the creation of a department of health, through a newly created bureau or whether an existing bureau be utilized. It is important, however, that Congress enact legislation at an early date which shall make for intelligent centralization, coördination and expansion of Federal health activities.

The Board of Directors has given earnest consideration to this important matter of coördination of Federal health activities, and at its summer meeting authorized the appointment of a special committee on coördination to coöperate, if possible, with similar committees of the American Medical Association and the Conference of State and Provincial Health Officers. Various informal meetings have been held with representatives of the two associations, but no definite conclusions have been arrived at. In order that the subject may be given the consideration which it deserves, a place has been given to it on the program of this meeting in the hope that there will be a full and free discussion. Probably as a result of such discussion the Association may deem it desirable to take definite action.

In laying down my office as president, may I again emphasize some of the things to which I alluded last year and which have repeatedly been dwelt upon by speakers at these meetings. I refer in particular to the need of building up an efficient corps of men competent to handle the problems of community health administration. A chain is as strong as its weakest link. It is useless to talk of improvements in Federal service and in state health administration, unless in our local work we can maintain and develop the same high standards. These cannot be obtained until in all communities we have trained men who give full time to their work, who are adequately paid and who will receive adequate appropriations for the work which they have in hand. There is no more important function of the American Public Health Association than to develop a professional group of skilled and sympathetic health officials who thoroughly understand the problems which confront them and who have the ability and the training to solve them. The Association is more and more realizing its mission in this direction. Year by year it is extending its activities, and year by year, if we continue along the present lines, we may hope to accomplish the purpose for which the Association was originally created, namely the prevention of unnecessary disease and untimely death.

A SUPREME NATIONAL NEED: COÖRDINATION AND ENLARGEMENT OF FEDERAL HEALTH ACTIVITIES.

W. S. RANKIN, M. D.,
Secretary, North Carolina State Board of Health.

Read before General Sessions, American Public Health Association, at New Orleans, October 29, 1919.

Too many cooks in health administration is the impending danger, suggests Dr. Rankin. It is time for the A. P. H. A. to insist on a "whole-time" Health Department for the Central Government. Health and medical associations should coöperate to effect this. They should find out what needs to be done and use their influence to have it done.

FOUR Cabinet Departments, the Treasury, Labor, Commerce and Agriculture, are today sharing, and a fifth, the Interior, is attempting to share in what apparently is the most popular duty of the Federal Government —public health administration. This popularity of health work with the executive division is reflected in the legislative division of the government. There are now pending before Congress seven important health bills, all of which represent the ideas of different legislative groups and executive departments without any attempt being made to combine and coördinate parallel and conflicting opinions. This general and divided interest of the government in public health work, where singleness of purpose and unified plan should exist, is many years out of date.

This divided and uncoördinated Federal health administration exists in spite of the fact that the last three presidents are on record as opposed to it. President Roosevelt said: "The first legislative step to be taken is that for concentration of the proper bureaus into one of the existing departments." President Taft said: "Certainly the economy of the union of all health agencies in the National Government in one bureau or department is wise." President Wilson said: "In order to avoid confusion in policies, duplication of effort, and to bring about more effective results, unity of control in the administration of public health activities of the Federal Government is obviously essential." . . . One of the greatest lessons of the war, a lesson written in the blood, barely dry, of hundreds of thousands of soldiers, is that unity of direction is necessary to prevent gaping and overlapping of work, and friction and jealousy,—that unity of command in dealing with any great and complex problem is essential to success.

The present form of Federal health administration is both a grievous hindrance to efficiency in national health work and a positive danger to state health work, and so should appeal to both those whose viewpoint is national and to those whose states contain them wholly. A danger to the states, because the abnormal form of health administration at Washington tends to spread, it is communicable. The Federal agencies engaged in health administration seem to feel that just as a man cannot serve two masters, so a single state health agency cannot serve or effectively coöperate with two Federal supervisors, that it will hate the one and love the other. As evidence of this tendency and this feeling, witness the provisions in the two bills, one sponsored by the Department of Labor, through the Children's Bureau, the other

by the Department of the Interior, through the Bureau of Education, each of which creates within the states its own state agency, which, with what is left of a state board or department of health, would impose upon each state a three-headed health administration. We would have one state commission coöperating with Miss Lathrop and in charge of all infant and maternal hygienic and sanitary problems, embracing about one-third of the total opportunities for reduction of death rates; another state commission, in the form of the state department of education, coöperating with Professor Claxton, and having charge of the entire field of school sanitation and hygiene, including medical inspection, and having to do with at least one-third of the population of a state at its most strategic age period; and lastly, we would have what was left of the old board or department of health, coöperating with Doctor Blue, until perchance another Federal health agency created a fourth state health commission. And so we see that the abnormal administration at Washington is highly communicable, dangerous to each state capitol, and that the safety of state health administration is conditioned upon treatment applied at Washington.

Considerations of treatment always raise questions as to cause. How does it happen that exactly half of the Cabinet Departments are participating in Federal health administration? This has come about because the primary Federal health agency has been incapable of taking advantage of the large fields for public health service as they have been opened up by research and demonstration. Research has outrun resources. The scientist has outstripped the statesman. Great opportunities for saving thousands and hundreds of thousands of lives have been unclaimed, gone begging. Under these circumstances it was natural that other Federal health agencies, alert to opportunity, responsive to popular demand, and with ability to secure the needed resources, have sought to cultivate what, without them, would have existed as fertile but barren soil. For this response to public needs, for using unrecognized and unappropriated opportunity, these Federal agencies that have lately assumed certain duties in Federal health administration deserve not criticism, but whole-hearted commendation.

Passing now from considerations of cause to those of responsibility, it should be said that the less attention given this phase of the subject the better. We are all partly responsible for existing conditions and it is altogether irrelevant at this time as to who is most responsible. Criticism is nearly always destructive, and this is a time for constructive thinking. It is a time when we cannot afford to be separated by the errors of the past, but when we should be solidly united by the challenge of the future.

Basing treatment on cause and recognizing the absence of a single strong Federal health agency, capable of utilizing the opportunities for public health work and meeting reasonable public demands for such work, as the cause of our present divided form of Federal health administration, the treatment would naturally consist in the establishment of such a health agency. This would be brought about by a consolidation of all agencies engaged in Federal health administration in one bureau, or in a department, or under a commission, with such extensions and additions to functions as national opportunities and resources permit. This is the strategic time for such a movement. The example of both England and Canada just having established a Ministry of Health, and the recent startling findings of the draft boards that thirty-eight per cent of our

population at its healthiest age period is physically unfit for purposes of national defense, could all be effectively utilized for coördinating and enlarging Federal health work. The field of public health is big enough and fundamentally important enough to demand the whole-hearted and the undivided attention of any single Federal agency. This Association, for a number of years, has concerned itself seriously with the question of whole-time health officers for the local governments; it is now time for the Association to insist on a whole-time health department for the Central Government.

As to plan of procedure: Only the novice and the man of careless reputation prescribes for his patients, no matter how obvious the indications for certain remedies, without a complete and thorough preliminary examination. If this principle is important in prescribing for the individual's health, of how much greater importance is it when applied to mapping out a complete and well considered plan for national health. The first essential step in the reorganization of Federal health activities is a thoroughgoing investigation to determine, first, what the Federal Government, under the Constitution, can do for national health; second, exactly what it is now doing; and third, just what it should do. Speaking as a member of the Council on Health and Public Instruction of the American Medical Association and as a member of the Executive Committee of the State Health Officers Association, I wish to say that such information does not exist.

The only objection that can possibly be raised to the preliminary study before proposing certain definite changes is the loss of time. That this objection will not apply is clear when we consider the present situation in Congress. As I have already stated, there are seven important public health bills pending before Congress, carrying appropriations from $2,000,000 to $100,000,000. The Federal Government is facing a deficit of $3,000,000,000. The majority in Congress are determined to make a record of curtailing rather than enlarging appropriations. It is, therefore, practically impossible to get through a bill reorganizing Federal health work within the next three or four months. No time will be lost, therefore, if we use the next three or four months in securing the necessary information as to what the government is doing and should do in health administration. In fact, instead of losing time, we save time by doing what, in the opinion of the committees representing the American Medical Association and the State Health Officers Association, is absolutely necessary to insuring the enactment of constructive legislation.

Such an investigation as is needed cannot be made by an extra-governmental agency, which will not have the power to summons witnesses, to require them to testify, to produce records. This has been tried without success. The agency making the needed investigation must have authority to summons witnesses, administer oaths, and require testimony and to produce records. This means that only a governmental commission can make the necessary preliminary investigation. As between a Presidential Commission and a Congressional Commission to make such a study, the advantages are clearly with the Congressional Commission. The Congressional Commission, with funds to employ experts in health work and administration, would be far more likely to make an investigation with recommendations that would be acted upon by Congress than would be the case with a commission appointed by the President.

Influenced by these considerations, a joint committee representing the Ameri-

can Medical Association and the State Health Officers Association, after conferring with a number of interested and influential members of the Senate and Congress, were instrumental in getting Senator France, Chairman of the Senate Committee on Public Health, and Mr. Dennison, a member of the Inter-State Quarantine Committee of Congress, before which public health matters are heard, to introduce in both Houses of Congress, a concurrent resolution which provided for a Congressional investigation and recommendations as to Federal health activities.

The resolution is as follows:

"*Resolved* by the Senate (the House of Representatives concurring), That a Joint Committee be and is hereby created, consisting of three members of the United States Senate and three members of the House of Representatives to be appointed by the President of the Senate and the Speaker of the House respectively, to make a survey of and report on those agencies of the Government of the United States which relate to the protection and promotion of the public health, sanitation, care of the sick and injured, and the collection and dissemination of information relating thereto; provided that the Medical Department of the United States Army and the Bureau of Medicine and Surgery of the United States Navy shall not be included within the scope of this survey.

SECTION 2. That such Committee is directed and empowered to report to the Congress not later than March 1, 1920:

(a) The statutory powers and duties conferred by the Congress on any department, division, bureau, office or agency of the United States Government to carry on any work pertaining to the conservation and improvement of the public health, together with any rules and regulations authorized or promulgated thereunder;

(b) The organizations now existing in the Federal Government for the purpose of carrying out these powers and duties, together with the personnel of, appropriations for and expenditures by each department, division, bureau, office and agency during the fiscal year ended June 30, 1919;

(c) The coördination now existing between said departments, divisions, bureaus, offices and agencies, together with any conflict, overlapping or duplication of powers, duties, functions, organization and activities;

(d) The coöperation and coördination now existing between the Government of the United States and the government of the several states or extra-governmental agencies for the conservation or improvement of the public health;

(e) Such further information as such Committee may deem proper;

(f) Such recommendations as such Committee may deem advisable to offer for the improvement of the public health work of the United States Government.

SECTION 3. That such Committee be and hereby is authorized during the Sixty-sixth Congress to send for persons, books and papers, to administer oaths, and to employ experts, deemed necessary by such Committee, a clerk and a stenographer to report such hearings as may be had in connection with any subject which may be before such Committee, such stenographer's services to be rendered at a cost not exceeding one dollar ($1.00) per printed page; the expenses involved in carrying out the provisions of this resolution one-half paid to be out of the contingent fund of the Senate and the other half out of the contingent fund of the House; and that such Committee may sit during the sessions or recesses of the Congress."

The practical and the obvious thing for the American Public Health Association to do under the circumstances is to appoint a strong committee to represent it and to act with the Council on Health and Public Instruction of the American Medical Association and the Executive Committee of the State Health Authorities in supporting the movement now definitely launched in Congress to make our national government adequate to meet the interstate public health needs of the United States, and I sincerely hope that the Association will promptly adopt such a course.

THE OUTDOOR POOL.

OBVIOUS NEED FOR CLEAN POOLS.

CHARLES V. CRASTER, M. D., D. P. H.,
Health Officer, Newark, N. J.

That almost any bit of water will serve for a wading pool seems to be the idea in practice. Dr. Craster has tested such pools and finds that they need to be as well constructed as bathing pools and as well cared for. Chlorination is necessary when they can not otherwise be controlled. : : : : : : : : : : : : : :

SPEAKING generally it is impossible to expect the water of swimming or wading pools, natural or artificial, to be clean in the ordinary meaning of the word. The question arises as to the necessity for expecting too great a standard of purity in these places. It is obvious, however, that there must be considerable danger to the health of children where the contents of any pool approaches a high degree of impurity.

In running brooks and some natural pools the current of fresh water is sufficient to keep the contents pure no matter how great the number of patrons. The same cannot, however, be said of natural streams or articifical ponds where the water's flow is so slight as to permit a real condition of over-contamination. Some light upon the conditions existing in city canals and wading pools was secured by an investigation upon the use for wading and swimming by children of a large canal running through a thickly populated district and several wading pools in use in public parks. Although the investigation was carried out in 1917 it represents present canal conditions and like conditions in uncontrolled public wading pools.

The canal in question is located in Newark, receives no sewage whatever from any locality during its whole course, but does receive storm water from house roofs and surface drains along its banks. There is an imperceptible current towards an outlet in the Passaic River through various canal locks. This canal is a very popular swimming place for the boys of this city and great difficulty is experienced in preventing its use for this purpose during hot weather. There was no known cause of pollution of the water of this canal at the time the investigation was made.

Samples of water were taken during the latter part of June. Four places popular among the boys in the city for swimming and wading were selected along the canal banks. Four samples of water taken in sunlight at these places showed the bacterial count to be between 1,400 and 225,000 bacteria per cubic centimeter. Fermenting bacilli were present in all, two samples showed colon bacilli in 1/20 of a cubic centimeter and in 1/10 of a cubic centimeter in another two.

The report of the city bacteriologist is unfavorable to the use of this canal water for bathing purposes not only on account of the results of the test made but also because of the great danger of the water receiving serious pollution in passing through the city and suburbs. It may be said in passing that the unclean condition of this canal water was not the result of barge contamination, the canal not being used for freight at this time. It would be well nigh impossible to make the water of such a canal fit for bathing purposes. Any open canal is naturally the catch-all of undesirable rubbish. Decomposing animals frequently contaminate its depths

and when it passes close to houses its use is altogether too convenient to be resisted as a depository for refuse.

It is safe to assume that the results obtained in the case of the canal could be duplicated in any other canal situated within a city's limits.

The filling up of natural streams and pools by city improvements has brought on an insistent cry for wading pools in public parks.

The resultant development of the artificial wading pool has been commendable. There are, however, more disadvantages than advantages in attempting to provide such facilities without due regard to the dangers of an insufficient supply of water and in the faulty materials used in construction.

POOL I.

It may be asked how is a wading child liable to harm no matter what kind of water is present in the pool. It is well to remember that children are frequently in bathing costume, splashing is part of the game and certainly very intimate contact with the hands and water takes place in playing with floating objects. Children will fall into the water and even put their faces to the surface. This being admitted, there can be no argument against clean water for wading pools, as there is none against that for swimming or bathing purposes. There may indeed be a further argument by reason of the more tender age of the children and their greater susceptibility to infection.

The wading pools investigated were those maintained during the summer in the various public parks. No swimming was allowed in any of them and they were under constant supervision by park attendants during use. In none of these pools had any efforts been made to control the purity of the water, the general scheme of construction being to imitate a natural wading pool in the country. The attendance of children of nearly all ages at these places was high during hot

weather and in some instances very young children were found bathing in the water. The conditions found were as follows:

Pool No. 1—approximately 150 x 100 feet. Depth of water 18 inches. Construction of pool, sand and gravel. Natural earth grading at sides. Water supplied from city mains. No continuous supply. Pool emptied and cleaned once a week. Fresh water added every day to make up for daily wastage. Average attendance of children at this pool 500 daily. The pool was in use during the time the samples of water were taken. Water appeared muddy with a black scum floating on surface in some parts.

Results of samples of water taken:

Sample	*Date*	*Temp. of Water*	*Time*	*Bacteria*
1	July 30	90°F	10.40 a. m.	7,500 per cc.
2	July 30	91°.8 F	5.15 p. m.	Too numerous to count. Fermenting bacilli in 1/10 cc.

The sample taken at the end of the day—No. 2—indicated the progressive contamination of the pool in use. The pool was quite separate from any other body of water and was surrounded by drives and walks.

Pool No. 2 situated in a large public

POOL II.

park surrounded by trees and shrubbery. The size is 350 x 100 feet, the depth of water 20 inches. It is divided off but is part of a larger lake. Banks and floor are of loose sand with gently sloping sides. City water is supplied from a one inch stand pipe making a continuous flow of water towards the outlet. The pool

POOL III.

is emptied once a week, scraped once a year and is treated with copper sulphate twice a week to keep down algæ.

The daily attendance of children 1,000 to 1,500,—no bathing.

Samples of water taken from this pool and results are shown as follows:

Sample	*Date*	*Temp. of Water*	*Time*	*Bacteria*
1	July 30	81°F	11.40 a. m.	Too numerous to count. Fermenting bacilli in 5 cc.
2	July 30	90°F	4.55 p. m.	31,000; fermenting bacilli in 1/10 cc.
3	Aug. 2	85°F	12.20 p. m.	12,000; fermenting bacilli in 1/20 c.c
4	Aug. 2	82°F	2.15 p. m.	12,000; fermenting bacilli in 1/10 cc.

In spite of the continuous supply of water this pool did not appear to be clean, water was muddy and opaque at the time of inspection. The excessive attendance of children overtaxed the diluting power of the incoming supply of fresh water.

Pool No. 3. This pool, by far the largest of the three, has an extent of nearly half an acre. It forms part of a much larger lake which is fed from underground springs. It is partly surrounded by trees and low shrubs and has a natural bed of sand. New sand is added every second

year. It is cleaned once a year and the water drawn off once a week. Daily average of children is 1,000 to 2,000. No bathing is allowed. Depth of water is from 16 to 24 inches.

Sample	*Date*	*Temp. of Water*	*Time*	*Bacteria*
1	July 30	90°F	1.20 p. m.	19,000; no fermenting bacilli
2	July 30	80°F	4.35 p. m.	10,000; fermenting bacilli in 5 cc.
3	Aug. 2	85°F	12.45 p. m.	3,000; fermenting bacilli in 1/2 cc.
4	Aug. 2	85°F	2.40 p. m.	85,000; fermenting bacilli in 1/5 c.c.

The bacterial counts of this pool were interesting on account of the large size and the great body of water available for dilution. The contamination here was due to an indifferent flow of current and no means of using the diluting power of the main lake.

In the investigation of the wading pools the contaminations have been shown to be due to the faulty laying out of these places as well as to the absence of a sufficient fresh water supply to dilute subsequent contamination. It is evident that wading pool water can be considerably contaminated irrespective of the fact that it may be part of a large sheet of water. In such places, where natural conditions are simulated, a good flow of water would considerably improve the sanitary quality of the water.

The purity of the water of the pools here described was subsequently controlled to a large extent by the use of chlorinated lime. In the subsequent supervision periodic chlorination was advised with consistent results.

Although any pool or pond might be safely used for wading with proper care, the only logical outdoor pool is one built along similar lines to the indoor bath house. These should have cement floors, sides, and coping, with a good supply of fresh running water. Showers and toilets should be conveniently located and no wading in shoes and stockings permitted.

Summary.

Water in wading pools is just as likely to be contaminated as bath water.

Water for diluting contents in wading pools is not usually sufficient.

Children frequently go into wading pools after having walked barefooted for miles upon roads.

The close contact between the wading child and the pool water is evident.

Contamination of pool water is brought about by insufficient diluting water and overcrowding of space by patrons.

Wading pools should be constructed of cement and properly equipped as baths.

Chlorination of all wading pools should be a routine proceding when content contamination cannot be otherwise controlled.

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ANTI-MALARIAL MEASURES.

Here and on other pages of this issue of the Journal there are presented illustrations of anti-malarial procedure in Southern states. The illustrations are from the camera of Mr. C. A. Abele, U. S. P. H. S., whose fields have been in Mississippi and Florida. This picture shows the improvement of stream banks. Sunshine inhibits oviposition, the smooth edges offer no lodging places for rubbish and the cleared banks facilitate oiling. Other illustrations will be found on pages 837, 843, 848 and 853.

WHAT IS THE MATTER WITH PUBLIC HEALTH TODAY?

H. W. Hill, M.D.
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Plain talk with the suggestion that the health officer has police powers oftentimes neglected to assume voluntary work not really within his province. Dr. Hill emphasizes the need of official fighting of disease and would leave baby weeks and milk depots to voluntary, civil organizations. : : : : : : : : : : : :

STOCKRAISING the human is the "big business" of modern public health. Think of public health as you will, from any angle you choose—you will find that no item of it lies outside that phrase, which completely covers all real public health endeavor, effort or aspiration, ideals and practice.

The matter with public health is that we all are trying to stockraise the human without realizing that that is what we are attempting; without seriously figuring the size of the job; without agreeing who is to do which—or how. We are agreed on the "why"—the desperate need of it; we are agreed on the "when"—right now; but the "what," the "who" and the "how" remain unsettled.

Stockraising cattle means beginning with whatever cattle are to be had; eliminating the "unfit"; providing the best of physiological care of the "fit"; and protecting the fit from invaders—from designing invaders such as cattle rustlers and wolves; from undesigning invaders, such as accidents and infections. Of course, when invaders, despite all our precautions, succeed in doing damage, repair of that damage is necessary; if the damage is physical, repairing it involves medicine and surgery, i. e., therapeutics.

These procedures, applied to cattle, are as ancient as mankind, and are not today immensely difficult, except regarding those invaders causing the infectious diseases, which it is now recognized, constitute the great modern problem of all kinds of stockraising, not only of that which deals with cattle.

Stockraising vegetables, flowers, fowl or wheat, involve just the same factors—eliminating the unfit; cultivating the fit; protecting the fit from invaders—from thieves, from accidents, from infection; and the most difficult of these is protecting the fit from infection, from rusts, smuts, rots, scales, bugs, beetles, *ad infinitum*.

We have to deal with exactly the same items in stockraising the human, for we must (1) eliminate the unfit—of which by far the most imminently important are the hereditary feebleminded; we must (2) provide for the fit physiologically proper conditions, especially at birth, during infancy, in school, viz., proper food, drink, housing, sleep, work, play; we must (3) protect these fit from invaders—from designed attacks, from accidents, from infection; and the greatest of these is infection.

The patching up of those humans who, despite all precautions, suffer from assault, accident, or disease, is the business of medicine, surgery, nursing—i. e., of therapeutics; and so far therapeutics is not usually included in public health, although perhaps it will be later on.

Truly, up-to-date public health is a huge job! There is no exaggeration

whatever in saying, that as the business of the Spanish-American war was to the business of the Great War, so is the business of the Great War to the business of real public health—to stockraising the human; for the human race is numerically the largest and sociologically the most difficult species which ever has presented itself for stockraising operations, and it is the most difficult, partly on account of its size, partly on account of its traditions, but chiefly because its only controlling authority is itself, because its own consent must be had before it can be stockraised at all.

The general proposition that public health is a good thing has, it is true, been accepted by the mass of the civilized world and there are now in operation a thousand most strenuous undertakings carried on in its name. But there still is no general agreement as to just what are real essentials; as to who shall do this, who that, as to how all shall be done; nor as to this most crucial detail—what, of that which is essential, must be done by compulsion, what may be done voluntarily.

The answer to this last question will go far towards answering the others.

Humanity has long since settled on broad lines that compulsion in public health, as in other matters, can be justified and receive assent only when the individual who is compelled is in some way dangerous to others.

In public health relations, this dangerousness is physiological, not moral or physical; the only dangerous individual, in the public health sense, is one whose physiological ills are transmissible, hence one who is hereditarily feebleminded, or actively infectious.

In all other forms of disease or defect, those not transmissible, the sufferer because not physiologically dangerous to others, may be guided in his physiological conduct, in the choice of his therapeutics, by pretty much any light he may choose, just as he may eat, vote, or expend his own money. There are of course some limitations, for instance, deliberate suicide is barred; and the individual may come under some form of legal compulsion, although not physiologically dangerous, if his physiological ills make him physically dangerous to others, for instance if he is drunk or insane. But there is no public health compulsion impinging on anyone who is not a physiological danger to others. Compulsion of the individual for his own physiological good does not exist in civilian public health. Even when his physiological condition is dangerous to others as well as to himself, he can be compelled only so far as is necessary to remove the danger to others; he cannot be compelled to take care or treatment which is exclusively designed for his own good. To put it briefly, public health compulsion stops short always of therapeutics.

Humanity has settled then that items 1 and 3 of our stockraising program may be compulsory, but item 2 (and therapeutics) are as a rule strictly voluntary. Items 1 and 3, those dealing with feebleminded-ness and with infection, not only may be compulsory but they must be compulsory, —for humanity fails often to do the right thing for its own good; and still oftener fails, when the good of others is the goal. Hence exists not only the right to compel, but the need for compulsion, whenever the rights of others are concerned.

Now when we consider who shall do the compelling, it is quite obvious at once that only governmental bodies clothed with police power can do it; certainly volunteers cannot.

But is it not equally true that our police power bodies should not do the voluntary, but that our volunteers

should? It is true that our official police powers are, here and there, already conducting some one or more of the items, prenatal work, obstetrical work, infant welfare, pre-school inspection, medical school inspection, adult physical examinations, those recognized activities which constitute our item 2, the non-compulsory list of physiologically regenerative measures for the race. But these official bodies while carrying on these voluntary measures, generally neglect their proper functions, that is, the use of their compulsory police powers against infection. They become awkward at using them, sometimes even afraid, so accustomed are they to the non-compulsory activities. Some public health propagandists, official and unofficial, even state frankly that compulsion is useless. Thus it is we are rapidly developing a situation where our police powers jolly the public, coax, appeal; cultivating the measures useful to the individual, taking on more and more of the non-compulsory program; but at the same time neglecting, even refusing, to carry out the compulsory measures which they alone can carry out. These are the very measures they were created to carry out; those compulsory measures which are not primarily for the good of the individual who is to be controlled, but are rather for the good of other individuals who are to be protected from him.

This principle is fundamental; rights of the individual cease where rights of other individuals begin. Personal liberty is not liberty for each one to do absolutely as he chooses, but to do absolutely as he chooses, provided he hurts no one else.

Against the physical invasion of the rights of others by nations, we have our military and naval forces; against burglars or footpads, we have the physical force of the constable; against the swindler we have the civic courts; against physiological invasion we have our health departments. The physical police have no power to compel any citizen to live thus or so, if he is not, by his otherwise living, injuring others. The civil courts cannot compel or prevent buying and selling, except as injury to others is involved in the transactions. Nor have health departments the right to direct or control the physiological operations of the citizen, except as those operations may harm others.

Until our views of governmental control change very much indeed from established principles, health departments that neglect to carry out their police powers in full, while pushing to the limit non-compulsory physiological welfare work, are exactly in the position of physical police who ignore street fights to run a Sunday school, or of civil courts which ignore swindling to push trade. Sunday schools should be run, commerce should be encouraged, non-compulsory physiological welfare work should go on, but our police powers have no rights in these matters, since they have their own clear duties assigned to them in a totally different direction.

The prevailing conceptions of the ordinary health officer as a weak-kneed, amateur policeman, whom it is fun to elude, or on the other hand as an official philanthropist whose chief duty is to advise mothers how to feed babies, to induce "foreigners" to "clean up," and to intervene in neighborhood squabbles about bad smells, are really due to the misconceptions of his work, held by himself, to inadequate equipment, and above all to the other inadequacies and fallacies of part-time service.

These misconceptions and the frightful inadequacies and disruptions of our official health services are inevitable chiefly because of the farcical status of the part-time health officer. He is the

present-day jest of the community as the part-time volunteer fire-department was of an earlier generation.

The fundamental misconceptions are these; that the practicing physician is from the nature of his training, necessarily and inevitably "learned in sanitary science"; that if he is practicing medicine, he is therefore already engaged in something closely allied to public health; and that the public health of the community is anyway so small a matter that he may conduct it quite sufficiently well as an incident, as a small side issue, of his own daily private practice! In brief the vicious circle is that the community sees nothing to be done in public health; the part-time health officer is paid to do that nothing; and, because he does that nothing quite successfully, the community is the more firmly convinced than ever that there is nothing to be done!

Our health department work is about 1 per cent efficient, not 90, 80, 70; not 10, or 5 or 2; it is about 1 per cent efficient, or perhaps less. Here and there in isolated communities, the figures are greater. Here and there, on a broad scale, great victories have been achieved. In smallpox and in typhoid fever, in malaria and yellow fever, public health has made good. In other diseases, it has been demonstrated that it is possible to make good, provided men and money are available. But this is as far as we have gone in public health. Therapeutics, medicine, surgery, nursing, have done wonders, because men and money have been spent on them like water. But public health is starved on both items almost to extinction in proportion to the demands.

The breaking of the vicious circle may be accomplished by introducing a whole-time health officer and leaving him to work out the salvation of the public health in his community. But often, the inadequacy of program and equipment results in the whole-time man doing little better than his part-time predecessor. Moreover the community as a whole does not appreciate prevention, it wants something it can see for its money. Hence there is the old temptation, too strong for most health departments, to collect garbage or to have "clean up" weeks—to make a showing. Meantime death and disease run along, uninterrupted. Hence also the new temptation to have "baby weeks," to establish "milk depots," to do the spectacular, attractive, seeable things, and in like proportion to avoid coming to real grips with real disease and death, tuberculosis, syphilis, etc.

Surely baby weeks and milk depots are good? Yes, but they can be done by voluntary associations. They afford an invaluable and tangible means of securing the coöperation of the seething energies of the public, disposed to public health; they are voluntary and do not require health department control; they are at present experimental and therefore not ripe for governmental action. The wise health department will do quietly its proper police functions, with the funds it has for that purpose. It will encourage and aid in the formation of self-financing volunteer agencies for those things which do not require police powers. It will steer clear of therapeutics.

Summary.

The stockraising of the human race is big business—too big for any one body, department or organization, to carry on.

Its first item, the elimination of the hereditary feebleminded, although in a broad sense public health is, on account of its technicalities both in physiology and in law, rather a business for a special official organization than for health departments as they now are understood.

Its second item, providing physiologically for the fit, is so tremendous, so experimental, so bound up with sociology, of so purely a voluntary nature, that it should be left to the enormous organized voluntary energies of the public itself.

Its third item, protection from disease, is by all concerned granted to be the essential *raison d'être* of health departments. It requires the compulsory powers they have, and the negligence of health departments to occupy this their own field, combined with their grasping after every other form of activity, has made of them too often mere laughing stocks.

Therapeutics, until such time, if ever, as medicine and surgery are applied compulsorily to the human as they are to cattle, should form no part of any compulsory organization work.

The whole-time officer who does his own proper duty against disease will have his hands full, and will find that non-compulsory fields have waiting to occupy them staunch moral supporters with time and money plentiful, who will co-operate with him in his work all the better for working themselves on these voluntary measures.

But the program of modern public health, the stockraising of the human, is no longer a matter for individual communities to face, isolated and alone. It requires nation-wide coördination, a building of individuals into compact organizations, coöperation of these with each other, and a close coöperation, but not union, with the official police powers.

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PERSONALITY IN PUBLIC HEALTH

James A. Tobey, S. B.
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A score card for health officers is a novel suggestion, but nevertheless one in accord with good common sense. Mr. Tobey argues that a responsible business executive is chosen with great care, and a health officer has more responsibility than most business executives. In his scale professional qualities are given the lowest place and personal qualities, the highest. : : : : : : : : : :

"Give me health and a day and I will make the pomp of emperors ridiculous."—Ralph Waldo Emerson.

SUCCESS is the ultimate goal of every man who is worth anything. The ambitious man does not wish to write his name in water, nor leave it only on the sands where the tide ebbs and flows and effaces all things; he wishes to achieve. The attainment of success is sometimes manifested by the acquirement of wealth, of fame, or of honor. But these material things do not represent real success. The intelligent application of energy, so that production is increased, or the amelioration of adverse conditions resulting in benefits to the human existence, this is true success. Often no riches and no glory accompany this type of success, but the satisfaction of having done a thing well and of having improved the destiny of mankind is sufficient compensation.

Most health workers wish to make a success of their profession. The problem is how to do it. The answer will not be

found in the text-books, for public health literature seems to deal only with the trade and not the craftsman. The first essential in the successful administration of any kind of health work is the man at the head of it. Good laws, adequate funds, coöperation and support of the public, efficiency, all are necessary and all can be obtained if the right man is in the right place. Given the tools the man with the personality to achieve will succeed, but merely putting the same instruments into the hands of the man lacking the proper qualifications will not make him successful. It is the human element which counts.

In a private business the man holding a responsible position is chosen with the utmost care. A health official is an important executive upon whom devolves the responsibility of keeping an entire community free from disease. If as much depended upon a man in an industry as does on the efficiency of a health officer and he made good at it, he would receive a salary three times as great as does this public official The welfare of the people demands that as much caution be shown in the selection of a health officer as in the choice of an industrial manager. The time for employment of the casual medical man and the convenient layman as health officers is past. As Vergil said, "The noblest motive is the public good" and the public good requires that a person be chosen for professional and personal qualifications on a full time basis and unsullied by political influence.

In order to correlate the qualifications necessary to success in public health, herewith is submitted a rating for health officials. Score cards are used for dairies, restaurants, barber shops and other objects in the jurisdiction of the health department, and even for employees in health departments, so why not score the health officer himself? Rating of men and not things was employed in the army and is frequently used in the industrial world, especially for promotions. No claim for perfection is made for this particular rating scale; it is simply the author's opinion.

A Rating for Health Officers.

	Perfect	Minimum Allowable
I. *Personal Qualifications:*		
Executive ability	7	
Initiative and enthusiasm	5	
Tact	5	
Broad-mindedness	3	
Aggressiveness	3	
Perseverance	3	
Ambition	2	
Total	28	18
II. *Moral Qualifications:*		
Integrity	10	
Character	10	
Total	20	20
III. *Mental Qualifications:*		
Common sense	7	
Judgment	6	
Memory	2	
Literary ability	3	
Total	18	12
IV. *Physical Qualifications:*		
Health	7	
Energy	5	
Appearance	3	
Public speaking	3	
Total	18	12
V. *Professional Qualifications:*		
General education	2	
Special training in public health	4	
Experience	5	
Achievements in public health	5	
Total	16	8
Grand Total	100	70

The scale is constructed on a basis of 100 points for perfect, rather than 1,000 since the former figure allows of a fairer rating, the tendency being to over-rate

on a 1,000 point principle. Furthermore, the person rated should be required to get a certain minimum rating under each of the five divisions into which the scale is separated. For convenience these five divisions are headed personal, moral, mental, physical, and professional qualifications. Obviously, a person might be perfect on all but the moral qualifications and get a rating of 80 per cent, but he would not do, unless it was intended to utilize the health department for a reformatory.

Every person engaged in public health work should practise what he preaches. If he would protect and preserve the health of others he should look after his own and disprove the words of Carlyle, "The healthy know not of their health, but only the sick." If a health official takes an afternoon off now and then to play baseball or tennis or golf, it is no crime; the conscientious man will work ten or twelve hours during an epidemic and is always ready in an emergency. Prof. W. T. Sedgwick once said in a lecture that the first essential in physical life is health, but in all life that it is truth. The inclusion of integrity in this rating needs no comment. Character is intended to embrace such things as loyalty, fairness, self-reliance, and disposition.

Of the personal qualities executive ability is placed first. It includes organizing and administrative power. Initiative and enthusiasm are also important. Emerson wrote, "Nothing great was ever achieved without enthusiasm." Energy might well be placed among the personal qualifications; in fact the line of demarcation between the various divisions is not well defined, but it makes comparatively little difference as long as the necessary items are included somewhere.

Tact and broad-mindedness are important attributes. Although health departments should be divorced from politics, there are frequently times in the best regulated departments when influence is attempted. It is well then to remember the formula of Richelieu, which was to use persuasion to the utmost, but that failing —force. The great cardinal was a successful man as men go. If the leading politician in the district walks suavely into the health office and informs the health officer that the prosecution of Mr. A is distasteful to him and must be dropped, it is not tactful immediately to tell this gentleman to go to hell. Instead, it should be explained that Mr. A's offense is a serious one, that as soon as Mr. B, the politician, understands the facts in the case he will readily see the necessity for prosecution, that the health officer is always at the service of Mr. B to do anything in his power in the cause of public health, but that he feels compelled to push this case, and besides the Board demands it. As a rule, Mr. B will allow himself to be reasoned with and will go away with a rather decent opinion of the health officer. If he does not, then is the time to tell him that politics and public health are incompatible, or words to that effect and go and win the case by perseverance and aggressiveness. As Theodore Roosevelt said, "Don't flinch, don't foul, and hit the line hard."

As to broad-mindedness or liberality. There are two sides to every question. Fairness to all and the ability to see the other person's viewpoint are great virtues. If the health officer requires that certain diseases be reported and makes no use of the reports, throwing them into some drawer to be forgotten, he is unfair to the doctors, whose time is valuable. If Alderman C wants a few dry holes filled or a dump leveled and the health officer can exert influence on Mr. D to have some of his cinders used for this purpose,

it is a politic thing to do, even if it does take a little time and there is no direct benefit to public health involved. By looking ahead and being broad-minded, the health officer will see that when he asks for an increased appropriation for the health department, Alderman C will be one of those voting in favor of it and the cause of public health is thereby advanced.

The necessity and desirability of common sense, which is another manner of saying intelligence, is apparent without explanation. An epigram of Publius Syrius is interesting in this connection, "Good health and good sense are two of life's greatest blessings." Literary ability is not so essential, but health officers are frequently called upon to write or speak and ought to be able to do either well. Yearly reports should be written in concise, readable English. Monthly or weekly bulletins should contain something besides statistics and present an opportunity for the expression of rhetorical ability. The health officer need not write like Victor Hugo or Henry James, but he should be able to sense the relative values of a subject and then express them correctly. If this plan were followed public health literature would never contain articles which read like poorly written reports of dull routine procedure. Magazines want that which is novel, though authoritative, and which adds something to the readers' knowledge or at least makes them think.

The professional qualifications are given the lowest amount, not because they are of minor importance, but because a man who has the other qualities given in the rating is one who can acquire these attributes. A proper training is, however, generally necessary in public health. A medical degree is desirable, but except in the case of rural communities, not necessary. If a man has executive ability, common sense, energy, integrity, and a thorough knowledge of the science of public health, what difference does it make whether he is a doctor or a sanitary engineer? It is the man and not the title he carries that is important. In the cities where expert medical advice is easily obtainable the properly qualified layman makes as good a guardian of public health as does the doctor. The point is that the physician is urgently needed as a practitioner and can not be replaced as such, but that he can be as a health officer.

Other qualifications which are not mentioned in this rating scale might well be inserted in it. For instance, a man could be required to have a sense of humor, for to have that is also to possess a sense of proportion. It may be argued that such a rating as proposed is too idealistic, that it would require not a man but a superman to fulfill it. On the contrary, if applied to a number of men of different grades and classes in a comparative manner, the practicability becomes evident. Any man who could not score 70 per cent on this scale is likely to be a poor health official. The time for the dilettante in public health is past; it is the expert who is needed.

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The Journal will present in its December issue Sir Arthur Newsholme's story of the Historical Development of Public Health Work in England as he presented it at New Orleans.

INFLUENZA AND PNEUMONIA.

BERNARD S. MALOY, M. D.,
Chicago, Ill.

At the Chicago meeting this author spoke in the General Sessions and was asked to continue beyond the time limit. There was discussion and endorsement. It was characterized to be a treatment of the older fashion much employed by physicians during the epidemic.

IN presenting the following method of treating influenza and pneumonia, I do so with the belief that very encouraging results may be obtained from such treatment by any physician, provided, he attend to the little things that have to do with the diseases under consideration; and, further, that he endeavor to keep ever in mind the great value of personal attention to patients. During the epidemic of 1918–'19 and while with the United States Public Health Service the writer attended several hundred cases of influenza and pneumonia without a death. The usual number were pregnant women but all made a quick recovery. The doses given below are for adults.

On the first visit to the patient I give calomel, veratrum viride, and aconite. The calomel tablet should be crushed and one-fourth grain given every half hour or hour until the patient has taken as much as two to two and one-half grains. If he appear very ill I give the tablets every half hour. If he has taken another laxative besides calomel before my arrival, I give the calomel, anyway. Experience has clearly demonstrated that the better the elimination the quicker do I obtain more favorable results. After six or eight hours I give one or two heaping tablespoonfuls of epsom salts dissolved in a small amount of hot water and cooled. Until the salts act freely a good many patients may have a throbbing headache. While giving the calomel, alternate with a solution containing the following:

℞

Tr., aconiti,	M., xxx to xxxvi
Tr., veratri viridis,	dr., ii to ii *ss*
Aquæ destil., qs ad,	oz., iii

M. Sig: As directed.

Give a half teaspoonful of the above solution every half hour for from six to ten doses, the number of doses depending upon the height of the pyrexia. Following these small doses continue with teaspoonful doses every two or three hours until the fever subsides and then lengthen the interval to six or eight hours between doses. Continue the solution, however, until you are certain the fever has been checked. Be quite sure that your tinctures are made from the best fluid extracts and from no other form of those drugs. There should be little, if any, precipitate.

Even though the patient complains of severe pains, I give no anodyne in the beginning, and at no time do I give an opiate for the pain. Many pains disappear after the intestine has been thoroughly emptied by the calomel and salts. If pain persists after the bowel has been cleansed of offending material I give the following:

℞

Phenacetin,	dr., i
Quin., sulph.,	gr., xxxvi
Capsici pulv.,	gr., i *ss*
Camphoræ pulv.,	gr., ii to iv
Ext., belladonnæ pulv.,	gr., i *ss*

M. et fiat in cap., ♯18.
Sig: One every three hours.

In almost all cases of influenza it is advisable to give some of these capsules.

In a good many cases it is well to refill the prescription and continue the capsules until the patient is convalescing. The capsules of the second box may be given from four to six hours apart. As the patient improves I give him one every six or eight hours. At the end of six or seven days again eliminate with calomel and salts.

During the crisis in pneumonia I give a tablet containing nitroglycerin, digitalis, and strychnine, at first per mouth. Dissolve one of the tablets in a teaspoonful of good brandy to which the same quantity of sugar and water have been added. This tablet and brandy should be given every three or four hours if there be cyanosis, or if the pulse is difficult to pick up. When the prostration is extreme I give the tablet with the needle every hour or two until the patient rallies. During this time I endeavor to administer the brandy and sugar by pouring it slowly under the tongue while urging him to swallow. Shaking the patient or speaking loudly into his ear will often arouse him.

If his cough persists after three or four days have passed I give an occasional dose of the following:

℞

Codeinæ sulph.,	gr., i *ss*
Ammon., chlor.,	gr., xv
Ext., glycyrrhizæ fl.,	dr., iii
Glycerini,	oz., i
Sy., pruni Virg., qs ad,	oz., iii

M. Sig: A teaspoonful every three or four hours.

During convalescence I give:

℞

Acidi arsenosi,	gr., ¼ to ½
Sy., hypophos., comp.,	oz., iii to iv
Vini olei morrhuæ, qs ad,	oz., viii

M. Sig: One tablespoonful at meal time.

I give the above as soon as he begins to eat pretty well.

For nourishment I give hot and rich soups and broths, plenty of butter, and coffee if desired, during the first two or three days, but no milk alone. Milk has not agreed with the majority of my patients who have had influenza and pneumonia. When I am sure that the pyrexia is under control I add the juices of stewed fruits and the fruit itself to the patient's diet; and I permit small quantities of solid food to be eaten when it can be determined that the patient is getting better even though he has no desire for food. Nourishing the patient is of the greatest importance and the foods mentioned, given within reason, even during the first days, will cause no ill effects. I strongly urge him to eat.

Give the medicine and nourishment regularly during the night as well as during the day and always arouse him for it. I endeavor to give the patient nourishment several times during the twenty-four hours. His position should be changed every few hours and the head and neck kept well extended. When he perspires I make no effort to check it, but I insist upon keeping every part of his body covered except the face. Even his arms and hands should remain under cover and his back and neck should be covered when he turns to lie on one side. I do not bathe him, change his underwear, apply anything to the chest, or bother him in any manner until he is convalescing, except to arouse him for the medicine and food and change his position. I have found it better to have the air fresh at all times, but always warm. A blanket should cover him and the same blanket should be wrapped around him when he gets up for any reason. Use no sheets nor muslin gown that may chill his body. Give plenty of water.

If he be very ill I make no effort to impress him with the seriousness of his condition, nor to conceal the fact or deceive him in any manner. It is indeed strange how a patient is able to

read the doctor's thoughts through his words or facial expression; this is especially true, it seems, when the patient realizes that he is fighting pneumonia. I believe that frankness and firmness from the beginning inspires the patient with confidence in the doctor, and the patient is more easily controlled when delirium appears.

I use the common Shepard stethoscope with heavy tubing. By leaning over I avoid touching the instrument, and I hold my breath during the time I endeavor to locate sounds with it. This plan enables me to pick up many more sounds, and from a greater distance and more quickly, thus avoiding the annoyance to the patient of a long-drawn-out examination.

A few words concerning the drugs I use may not come amiss. Disregard many things found in text-books concerning the action and dosage of veratrum viride and aconite, and use them together and in the quantities I suggest. I am sure that you will be pleased and agreeably surprised at the results obtained using the two drugs combined in treating influenza and pneumonia. Calomel has always been a very valuable drug—and one much abused. My experience leads me to the belief that those persons who are nauseated the most after taking calomel really need it the most.

Let me urge you to regard any moderately severe case of influenza as a forerunner of pneumonia. Do not wait until pneumonia develops, but begin the above treatment at once. Last winter in one town of 2,000 inhabitants, during a period of four weeks, the resident physician lost nineteen cases of pneumonia, while the writer's pneumonia patients numbered only six during that same four weeks, and all recovered. This instance, together with others very similar, leads me to think that the treatment suggested above aborts many cases of pneumonia; for, it is only fair to add that, as a rule, the Government physician attended a great many more patients in a community during a given time than the local physician, and he was usually called to attend those most desperately ill.

Finally, permit me to say that I have followed almost the same line of treatment for pneumonia as herein suggested for many years with very few deaths. It is my firm belief that the combination of the two tinctures is an excellent one and one of great value. If the suggestions given in this paper be carefully followed I am certain that very pleasing results will follow and the death rate of influenza and pneumonia will be greatly lowered.

OIL SPRAYER, ANNISTON, MISS.

Another of Mr. Abele's pictures showing the type of operative and the outfit for oiling pools.

PUBLIC HEALTH WORK IN INDIA.

I.

THE CASTE SYSTEM AND THE SANITARY PROBLEM.

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Many endemic centres of communicable disease lie in the Orient and therefore the future fight of preventive medicine must be largely in Eastern countries. Mr. Jenks, with some years of experience in Hindustan as sanitary engineer, outlines racial conditions that are fundamental. They must be recognized in any plan for bettered sanitation. : : : : : : : : : : : : :

PERHAPS the most important of all the elements that govern the character and effect of sanitary effort among the indigenous population of India is the influence of the native habits and customs. Habit is practically the sole arbiter in the lives of the people, an ingrained characteristic that finds its most far-reaching development in the caste system. To those who are in charge of public health work in India a study of the social conditions, the peculiar customs and the religious prejudices of the different Indian communities is of great importance, both as a guide in the selection of methods of procedure and as a means of enlisting the coöperation of those for whom the work is being carried on.

So many and varied are the aspects of the problem of the habits and customs of India's 350,000,000 of people in relation not only to the great question of sanitation but also in their bearing upon the activities of every-day life, that a detailed consideration of them is manifestly impossible outside the pages of a special work on the subject. Accordingly it is the purpose of this and the succeeding article to describe very briefly the outstanding features of the development of the religious scruples embodied in the caste system and the relation to health and disease of these and other practices; and to discuss in outline the nature and progress of public health work in India, with particular reference to rural and municipal sanitation and to the control of infectious diseases.

GEOGRAPHICAL DIVISIONS OF INDIA.

The main portion of India forms, roughly, a triangle separated along the base from the rest of Asia by the lofty Himalayas and bordered on the east and west sides respectively by the Bay of Bengal and the Arabian Sea. The province of Burma adjoins the northeast corner, while Ceylon lies at the southern apex. The distance east and west along the northern boundary is 1,800 miles, and from north to south the country extends 2,000 miles. The area is 1,770,000 square miles, or about 0.6 that of the United States, so that with a population estimated at 350,000,000 the average density equals 198 persons per square mile.

The most fertile and at the same time most populous part of India is the Ganges valley, extending from Bengal to the Punjab and lying between the Himalayan mountains and the great central plateau known as the Deccan. The climate of this region is characterized by extreme

heat in summer and chilliness to cold in winter, according to the latitude and distance from the sea. Near the coast, the humidity is high, decreasing materially and progressively towards the northwest. The land extends as a great, almost level plain from Calcutta to Allahabad at the junction of the Jumna and Ganges rivers, and from there on as far as Agra, where the country becomes more rolling. The water table is everywhere near the ground surface so that the open shallow well is the common source of water supply. On the individual farms and in the villages, drainage is poor, with the result that water collected during the monsoon season remains for weeks at a time in depressions or in artificial excavations known as "tanks." This water is frequently the chief source of supply for drinking purposes. It may at the same time be used for irrigation, and almost invariably serves in addition as the village bathing pool.

Towards the west coast the main topographical features are the coastal plain, the semi-arid, hilly country that separates it from the Jumna valley on the north, and the Western Ghats or mountains that form a barrier between the coast and Central India. The western slopes of these mountains form a region of high rainfall and beautiful tropical scenery.

Central and southern India comprise in the main "jungle" country of irregular topography, with few large cities. On the eastern coast, after the Eastern Ghats are passed, a hot, humid region is again encountered, these conditions being felt particularly in such ports as Madras and Calcutta.

Owing to the great size of the country, which was particularly felt at the time the earliest settlements were made in India by the invading tribes from the northwest, and as a result of the geographic and climatic differences encountered there, it was but natural that the population should, from remote times, show great diversity of habits and customs as well as of physical development. Until the introduction of railway transportation, the life of the average Indian was confined within the limits of his own village or plot of ground, except for a pilgrimage once or twice in a life-time to some sacred city in a distant part of the country.

Evolution of the Caste System.

The ancient history of India is veiled in obscurity and myth. According to the Rig-veda, the oldest book of Hindu epics, the first settlement of the Aryans in the plain of Hindustan was in what is now known as the Punjab, and the date recorded would correspond to about 4000 B. C.

The evolution of the caste system was evidently a gradual one, brought about by the necessity for division of labor as social and economic problems became more numerous and complex. From earliest times, four great divisions of the people were recognized, namely: Brahmins, Kshastrias, Vaishias and Shudras. The Brahmins are the priestly caste, including the Hindu scholars and teachers as well as those who administer the affairs of Hindu worship. The Kshastrias would be termed, in modern parlance, the "military class." The remainder of the Aryan conquerers went by the name of Vaishias and are those that are now engaged in agriculture and trade. The Hinduised non-Aryan group comprised the Shudra, or low caste. At first the caste distinction affected individuals merely, much in the same way as distinction is made between business and professional men in our own country today. Gradually, however, the idea of caste took on not only an occupational but a religious significance and, becoming hereditary, formed lines

of cleavage among families and entire communities, as the years went by.

The prominence in the Hindu's nature given to mind over matter has led to the development of an intricate ritual of

A favorite spot with Benares bathers, just below the outfall of a modern egg-shaped sewer.

worship and of household and social customs which, whatever supposed benefit they may have ever been to the spirit, have certainly not failed in the attempt on the part of the individual to discount the value of a normal, healthy bodily development. If it is true that the Hindus long ago knew the laws by which we direct our sanitary efforts today, they must have known them with amazing thoroughness, for it would appear impossible that a people ignorant of them could devise so many ways of violating them. The sanitarian is almost constrained to believe that, to the masses, the more dirt and bacteria scattered about, the more congenial are the surroundings; and if the dirt and bacteria are of a particular kind recommended by their rules of caste, the more "holy" and "sacred" the spot is. One has simply to visit some great religious center such as Benares to appreciate the truth of this statement. Along the three miles of river front, where on ordinary feast days as many as four million pilgrims bathe promiscuously in the sacred Ganges during the course of a single day, some of the most favored points for washing are immediately below sewer outfalls. Similarly, the best water for the pilgrims to take home with them in their brass lotas is not the Ganges water itself, but water obtained from a terraced excavation near the river-bank, into which water is admitted during the high stage of the river and allowed to remain in the pool until the next flood season.

Essential Characteristics of the People.

The present discussion is confined in the main to the caste system because three-fourths of the Indian population are Hindus, in whose lives the observances of caste are of predominant concern. In

In this "tank" thousands of natives bathe. The pilgrims then carry away water from the sacred pool in their water jars. The pool is replenished when the floods cause the river again to overflow its banks.

the case of the Moslem community, which comprises practically the remainder of the population, caste distinctions do not occur, but the elements in Mahomedan family and social life inimical to progress in public health work give rise to problems quite similar to those encountered in dealing with the apathy and religious susceptibilities of the Hindus.

Following out his in-born bent towards mysticism and philosophy, the Indian is by nature a religious individual, and to such an extent are the thoughts and practices of the Oriental religions interwoven with the activities of every-day life, that they have left an indelible impress upon the individual character. In perhaps no other country does the sanitarian find it necessary to take into consideration to such an extent the religious views of the people. In India it may be a decisive factor in the success or failure of his efforts. We in the United States may at times have our difficulties in meeting the attacks of those opposed to a public health measure such as vaccination. There is, however, nothing in the experience of the American health officer that corresponds to the passive resistance shown by the Hindu against inoculation on account of the animal origin of the serum, the destruction of animal life being repugnant to all good Hindus.

Important as is the bearing of the caste system and various religious practices upon the sanitary problem, still another factor of great weight must be considered also. This further element in the problem is the economic condition of the people.

India is essentially an agricultural country. Outside of three large cities, Bombay, Calcutta and Madras, with populations of approximately 1,000,000 for Bombay and Calcutta, and 500,000 for Madras; and apart from a score of cities whose population is in the neighborhood of 250,000, the great mass of the people live on farms and in scattered villages. It is, moreover, hardly an exaggeration to say that these people are engaged in a ceaseless struggle for existence. The recurrence of famines, even under the excellent systems of irrigation and transportation introduced by the British, are but a testimony to the fact that there is always a delicate balance between the needs of the individual coolie and the food supply that he is able to procure.

Under such conditions it is of no advantage to the cause of sanitation to tell the average Indian that "Public health is purchasable"; for even if interested in

In a primitive country like this, Public Health must needs be molded in simple fashion like the native crafts. Note the technique of the Hindu oxshoer.

making such a purchase, the Indian lacks the money with which to do it. Evidently, therefore, the great bulk of the sanitary work that awaits accomplishment must be done through government agencies. Until the economic status of the masses is raised, expenditures on the part of the individual for even the sanitary arrangements about the house and for such material as contributes to personal hygiene are out of the question. Until the coolie laborer can afford two blankets, he will use the cast-off blanket of a relative

who has just died of smallpox or cholera; until a sanitary privy becomes a financial possibility, education alone will not deter the Hindu from observing the code of Manu which permits defecation on the ground at a distance from the mud hut equal to the flight of an arrow. In effect, until the Indian earns enough rupees per month above those required to buy dal and rice for himself and family, he cannot afford, even though caste prejudice were removed, to cover the floor of his hut with anything but cow-dung, which he has but to obtain from an adjoining shed where the family cow is kept.

It is not to be wondered at, therefore, that, coupled with an inherent mysticism and habits of caste that expose the physical organism to the inroads of disease from every quarter, the general economic poverty of the masses should have resulted in a pronounced apathy towards all sanitary improvement, and a frame of mind tinged so deeply with fatalism. So powerful is this influence that in the days before inoculation became compulsory for plague, whole sections of a community would be almost entirely swept away rather than accept the relative immunity conferred by the serum upon other less fanatical classes. It is not uncommon to hear the story told that a Hindu, considering himself wronged by another, will simply lie down and die to spite him. However true this may be in practice, it is certain that in the treatment of patients against their will, this possibility is often weighed against the chances of death without treatment.

Elements Opposing the Caste System and Aiding Sanitary Progress.

In the foregoing paragraphs mention has been made of the chief difficulties that confront the sanitarian in his work among the heterogenous peoples of India, especially those that arise from the peculiar practices and habits of thought resulting from the observance of the caste system. It is the belief among public health workers in India that, although no immediate, widespread improvement can be hoped for in the country, or mofussil districts, yet in the centers of population several powerful factors are making possible better sanitary conditions.

Where the fakir gathers his companies of spectators, natives in all degrees of dirt and stages of negligée.

Of these factors, perhaps that of the general introduction of western education is exerting the most potent influence. In the larger towns and cities there has already been awakened a desire for better living conditions, and the weight of this public opinion on health matters is gradually making itself felt in the surrounding districts.

The ignorance of the average Indian and his passive resistance towards any innovation which affects his habits and customs are, as might be expected, yielding to the enlightened thought and improved material surroundings introduced by European civilization. Knowledge of the world gained by the educated Hindus both in Indian colleges and through foreign travel is contributing slowly to the breaking down of caste prejudice among the influential classes. Similarly, among the people at large, nothing has served so

well towards removing the distinctions of caste as the introduction of modern means of transportation in India. Traveling by train in that country has been brought within the means of the very poorest; consequently an enormous volume of traffic is encountered on all railways in India and particularly on those that pass through any of the sacred cities of the land. The fact that the great majority of Indians now make their pilgrimages by railway has greatly increased the opportunities for the rapid spread of infectious diseases, and gives rise to new problems in the control of the great epidemics that are so frequently the sequel to a great festival. Apart from this result, however, the establishment of rapid lines of communication, promoting the intermingling of people from distant provinces, has had a most salutary effect in preparing the Indian mind to accept innovations in many other forms, including those found by sanitarians to be necessary to the furtherance of the cause of public health.

Finally, in addition to the slow process of education, the immediate and tangible benefits following the introduction of clean water supplies, drainage and sewerage systems and rat-proof bazaars, and the establishment of hospitals and public dispensaries, have claimed the attention and appreciation of the most ignorant and apathetic. It is still true that, given a city tap furnishing safe water and a contaminated well a few feet away, certain castes as the Murjadis of the Bhatia class, who are enjoined to drink water from wells alone, will refuse to draw water from the city tap—at least until the well is filled up by the health authorities—yet through the example of the more enlightened classes and by tact and infinite patience on the part of the administrative staff of the health department, the desired results may be attained. In most routine work where once coercion was needed, constant vigilance is now sufficient. It will be a long time, however, before the average Indian will of his own accord keep himself and his surroundings clean.

In concluding the present discussion it may be said that the effects of the sanitarian's work upon the peoples of India are at one and the same time his chief reason for enthusiasm and for despair. Considering the almost limitless field for his efforts and the beneficial results that appear when insanitary conditions are relieved ever so slightly, he is constrained to feel encouraged. On the other hand, it seems at times a well-nigh hopeless undertaking to attempt to make any real progress in view of the sheer magnitude of the task. Just as the time-factor is all-important in the self-purification of streams, so also will it require much time for the public health officer and sanitary engineer to instill in the minds of India's 350,000,000 of people our modern ideas of sanitation and cleanliness.

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ONE REASON WHY.

Here there is shown, through the courtesy of Mr. C. A. Abele, a feces wagon at Anniston, Miss. A sharp eye can note the condition of the wheels and wagon. It is such procedure as this that the great health education forces of the country seek to remedy.

CHARACTERISTICS OF THE COLON TYPE OF BACTERIA FOUND IN FECES.

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Science does not yet differentiate between B. coli from various animal sources. Water showing fecal contamination may not have been polluted by man, and may be free from typhoid, paratyphoid, dysentery, etc. Condemnation as well as approval, therefore, should always be very carefully considered. : : : : : : : :

CONSIDERABLE attention has been given in the past few years to the bacteria of the colon group because of the importance of this group as an indicator of sewage contamination in water supplies. It was formerly supposed by most water analysts that if an organism found in water fermented lactose, did not liquefy gelatin, was decolorized by Gram's method of staining, and did not form spores, the evidence was sufficient to indicate fecal contamination.

Due largely to the work of MacConkey (1), Rogers, Clark, and Evans (2), Levine (3), Johnson (4), and others, attention has been directed to the prevalence of B. aërogenes, an organism which fulfills the above four requirements, in other sources than feces. These same workers have likewise emphasized the scarcity of this organism in various fecal materials which they have examined. The results of these investigations are well summarized by Winslow and Cohen (5), in a recent paper where they show that of 3,348 strains isolated from feces by various workers only 264, less than 8 per cent, were of the B. aërogenes type.

B. aërogenes has been very commonly found on grains, fruits, leaves, in soil and other places supposedly free from fecal contamination. Primarily because of these findings the Committee on Standard Methods of Water Analysis has included in the 1917 edition of its report other directions for separating the fecal from the non-fecal organisms than the so-called "Presumptive and Completed Tests" for B. coli. It becomes evident, then, that a study of the coli-like organisms of fecal matter may throw some additional light on the intestinal distribution of B. aërogenes as well as add to our knowledge of the different types of B. coli and their distribution in feces from different animals.

METHODS.

Feces from five different animals were used, including man, horse, sheep, rabbit, and chick. In the collection of the feces five samples of each type were used and in general from as many individual animals. The material was collected aseptically and after dilution in sterile water was plated on lactose litmus agar. From the incubated plates coli-like colonies which showed acid production were selected and from them streak cultures were made onto plain nutrient agar. In the selection of the cultures for study only short, rod-like organisms which fermented lactose with production of acid and gas were chosen. Such organisms seemed to be abundant in all feces, excepting those collected from the chick, in which case several collections had to be made before a sufficient number of cultures could be obtained. The number of cultures obtained and studied from each

kind of feces was as follows: Man, 20; horse, 23; sheep, 23; rabbit, 26; chick, 21.

To determine the characteristics of the various cultures the following tests and observations were made: Motility, spore formation, capsule formation in milk, liquefication of gelatin, reaction to Gram's stain, production of indol, reduction of nitrates, reaction in milk, methyl red and Voges-Proskauer tests, fermentation of dextrose, lactose, saccharose, inulin, mannit, and salicin, and diastasic action on potato starch. All tests were made according to the methods outlined by the Committee of the Society of American Bacteriologists (6) on the Chart for Identification of Bacterial Species in its preliminary report All tests were made in duplicate.

Results.

Motility. In the cultures from human feces all were motile as determined by the hanging drop method; from horse 17 (73.9 per cent) were motile; from sheep all were motile; from rabbit, 24 (92.3 per cent), and from chick, 16 (76.2 per cent), were motile.

Spore Formation. None of the cultures produced spores on agar when grown for three weeks.

Capsule Formation. The formation of capsules when grown in milk appeared to be variable, especially in some cultures; in carefully stained slides some of the individuals in the preparation would show a capsule very clearly while others would be without it. There were differences, also, in the thickness of capsule formed; some cultures would have a very pronounced capsule often as thick as the organism itself while others would be so thin as to require careful examination for detection. The condition last named was especially true in the cultures obtained from the chick. The following were the results: The cultures from man and horse showed no capsules; from rabbit, 100 per cent showed capsules; from sheep, 95.6 per cent, and from chick, 95.2 per cent, or all but one from each of these series were capsulated. In this connection it may be noted that Rogers, Clark, and Evans (2) report considerable variation in capsule formation in the strains isolated by them from grains.

Liquefication of Gelatin. None of the cultures liquefied gelatin.

Gram Stain. All of the cultures were gram negative.

Production of Indol. Indol was produced by all cultures.

Reduction of Nitrates. All cultures produced nitrites from nitrates and all gave a positive test with Nessler's solution for ammonia; no gas, however, was collected in the inverted vials inserted in the tubes.

Reaction in Milk. The reactions in milk were recorded under two heads,—acid production as determined by the indicator brome cresol purple and the coagulation of casein. In 48 hours all cultures had produced acid sufficient to turn milk yellow. The time involved in the coagulation of the casein was somewhat variable. In the cultures from human feces coagulation took place in all cultures in 48 hours; 21 (91.3 per cent) from horse coagulated the casein in 48 hours, the remaining two cultures in 72 hours; 16 (69.5 per cent) of the cultures from sheep produced coagulation in 48 hours, the others from 3 to 8 days; of cultures from rabbit 12 (46.1 per cent) were coagulated in 48 hours, 11 of the remainder were coagulated at the end of 7 days, while 3 did not coagulate the casein in 10 days; from the chick only 2 (9.5 per cent) coagulated in 48 hours, 2 more in 72 hours, 13 in 4 days, 3 in 5 days, and the remaining 1 in 6 days. All cultures were incubated in duplicate, the results checking in each case.

Methyl Red and Voges-Proskauer Tests. Without exception all cultures were methyl red positive and Voges-Proskauer negative, which, according to the work of Clark and Lubs (12) and of Levine (3), showed all of the cultures isolated to be B. coli. A known culture of B. aërogenes was grown and tested as a control, this giving methyl red negative and Voges-Proskauer positive.

Fermentation of Carbohydrates. (a) *Dextrose.* In all cultures acid was produced in dextrose broth; gas was produced in all but one culture, that being from the horse. The same culture produced the same results in mannit broth,—acid but no gas.

(b) *Lactose.* All cultures produced both acid and gas in lactose broth, in fact, cultures which did not produce such were discarded at the beginning.

(c) *Saccharose.* In the fermentation of this carbohydrate there was considerable variation in the different cultures; in those from human feces 6 (30 per cent) produced both gas and acid; in the cultures from horse 13 (56.6 per cent) produced acid and 10 (43.5 per cent) produced both acid and gas; in the cultures from sheep 7 (30.4 per cent) produced acid and 6 (26 per cent) produced both acid and gas; in the cultures from rabbit 22 (84.6 per cent) produced both acid and gas; in the cultures from chick only 4 (19 per cent) produced both acid and gas, —in the cultures from man, rabbit, and chick gas was produced in all cases where acid was produced. In those cultures in which acid without gas was produced the reaction for acid was distinct showing at least 0.5 per cent more acid as determined by titration than the sterile incubated broth. The cultures which produced gas were not titrated. The above results are included in Table I.

(d) *Inulin.* Not one of the cultures produced either acid or gas in inulin broth.

(e) *Mannit.* In the cultures from man, sheep, rabbit, and chick all produced both acid and gas in mannit broth. In the cultures from horse 19 (82.6 per cent) produced acid from mannit and 18 (78.2 per cent) produced both acid and gas. The test was repeated in duplicate three times with the four negative cultures but the results were always negative.

(f) *Salicin.* The fermentation of salicin was shown by the production of both acid and gas in 10 (50 per cent) cultures from man; 20 (87 per cent) from horse; 21 (91 per cent) from sheep; 26 (100 per cent) from rabbit; and 10 (47.6 per cent) from chick. These results are included in Table I. It should be noted in this connection that fermentation of salicin takes place more slowly than that of the other carbohydrates used in this investigation. Incubation for 72 hours was necessary to detect all positive cultures; this is in accord with the work of Levine (11) in his use of this carbohydrate.

Diastasic Action on Potato Starch. None of the cultures showed any reduction of starch.

Production of Pigment. No attempt was made to differentiate between the various cultures in the production of pigment since all were practically the same color when grown on agar,—translucent or whitish.

DISCUSSION AND CONCLUSIONS.

Considering the proportionate number of B. coli and B. aërogenes the results obtained in this work appear to emphasize the general conditions already found by other investigators, namely, the absence or the relatively small number of B. aërogenes in feces. Rogers, Clark, and Lubs (7) by direct plating found in human feces 46 (26 per cent) B. aërogenes out of 177 cultures; Rogers, Clark, and Evans (8) in bovine feces found only one B. aërogenes out of 150 cultures isolated; in

feces from different animals including man MacConkey (1) found 19 (5 per cent) B. aërogenes out of 368 cultures isolated; Clemesha (9) found 184 (8 per cent) out of 2,236; Ferriera, Horta, and Paredes (10) found 8 (6.8 per cent) out of 117; and Levine (11) failed to find any B. aërogenes in 117 cultures isolated from various feces.

In attempting to determine characteristics which would differentiate the organisms from different sources, the tests which showed the most marked variations in the various cultures were motility, capsule formation in milk, coagulation of casein, fermentation of saccharose, and fermentation of salicin. Table I shows the results obtained.

TABLE I.

COMPARISON OF VARIOUS CHARACTERISTICS WITH SOURCE.

Source	Motility, % Positive	Capsule, % Positive	Coagulation of Casein in 48 Hours, % Positive	Fermentation of Saccharose, % Positive	Fermentation of Salicin, % Positive
Man	100	0	100	30	50
Horse	74	0	91	57	87
Sheep	100	95	70	30	91
Rabbit	92	100	46	85	100
Chick	76	95	10	30	48

Motility cannot be considered as a characteristic of much value in differentiating the organisms from different sources; there is some variation in the different percentages but this variation is not great enough to warrant drawing any conclusions.

There is a marked difference in the formation of a capsule in some of the groups. In those cultures isolated from man and horse no capsules were detected whereas, nearly all of the cultures from sheep, rabbit, and chick showed capsules. Although the formation of a capsule appears to be variable in the individual cells of the same culture, nevertheless the characteristic is suggestive as a means of separating some of the groups.

Considerable differences exist in the percentage of cultures which coagulate casein in forty-eight hours at 37° C. The amount of emphasis to be placed on this characteristic as a means of differentiation can be determined only by further work on a great many more cultures from each source.

In the fermentation of saccharose it may be noted that the cultures from man, sheep, and chick show the same percentage of positive cultures, whereas in those isolated from rabbit the percentage is nearly three times greater, those from horse nearly twice as great. Levine (11) likewise found a much higher percentage of saccharose fermenters in horse feces, 79 per cent out of 19 cultures, but he also found 95.5 per cent of fermenters in sheep feces; the marked difference in percentages in the cultures isolated from sheep as reported by Levine in comparison with those of the present work may be due to the small number of cultures tested in each case. Other workers, including MacConkey, Clemesha, Ferreira, Horta, and Paredes, and others, in determining the characteristics of B. coli from human feces, report about 32 per cent of their cultures fermenting the sugar, indicating that this is about the percentage of saccharose fermenters in the colon cultures from human feces.

In the fermentation of salicin the cultures from man and chick show about the same percentage, the cultures from horse, sheep, and rabbit show a much higher percentage of salicin fermenters; Levine (11) found 68.3 per cent of his 22 cultures from sheep fermenting salicin in comparison with 91 per cent out of 23 cultures in the present investigation.

It becomes evident that so far as our knowledge at present extends there is nothing which definitely characterizes

broth.

aërogenes out of 150 cultures isolated in

the B. coli from different animal feces. Water, therefore, which shows fecal contamination by bacteriological analysis may be polluted by certain animals other than man and be free from the organisms, such as typhoid, paratyphoid, dysentery, and other bacilli, which cause diseases in man. This investigation should serve to emphasize the importance of a careful sanitary survey of the water supply in addition to a bacteriological examination before water is considered dangerous for use.

Summary.

Of the 113 coli-like cultures isolated from feces including 20 from man, 23 from horse, 23 from sheep, 26 from rabbit, and 21 from chick, none were of the B. aërogenes type as determined by the methyl red and Voges-Proskauer tests.

The characteristics which showed the greatest variations among the different cultures were motility, capsule formation in milk, coagulation of casein, fermentation of saccharose, and fermentation of salicin.

Capsule formation and coagulation of caseiif are suggestive as characters for distinguishing between B. coli from different sources.

Water may contain B. coli from other than human feces but at present there is no means known of differentiating these organisms from different animals.

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THE SILENT ASSISTANT.

This illustration from the camera of Mr. C. A. Abele, shows one of the methods of oiling the streams. The brook is sluggish, although the size of the waterway indicates much activity at flood time. The drip can is not ornamental but it is simple and serviceable.

INFLUENZA-PNEUMONIA AS INFLUENCED BY DISH-WASHING IN THREE HUNDRED AND SEVENTY PUBLIC INSTITUTIONS.

LIEUT.-COL. JAMES G. CUMMING, M. C., U. S. A.,
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Colonel Cumming extends the trail he blazed in the matter of insanitary dishwashing. He finds in institutions that wash by hand in lukewarm water that there was three times the incidence of influenza-pneumonia that there was in institutions with steam dishwashing. His conclusions are based on an institution population of 252,186.

IN public eating places, institutions, hotels, restaurants, etc., there are two methods of washing eating utensils. By the handwashing method the dishes are cleansed of gross food particles, but they are not disinfected, since the water must always be of a temperature easily withstood by the dishwasher's hands. At this temperature there is no disinfectant action, and as successive batches of utensils are washed, this lukewarm water becomes highly contaminated. Our investigations show this pollution may be as high as 25,000,000 organisms per cc.

Within recent years the mechanical process of dishwashing has been adopted in the better hotels and restaurants and in many public institutions. From the manager's point of view the chief advantage is that of economy. From the sanitarian's standpoint there is the advantage that mechanical dishwashers disinfect the dishes to a degree depending on the temperature of the water and the duration of exposure of the dishes to the disinfecting action. Hitherto, this disinfection of dishes by scalding hot water has not been especially recognized as of value as a public health measure.

Even with the mechanical appliances there is a lack of standardization in their use, for temperatures as low as 50° C. were observed, while in others it was invariably at from 75° to 90° C.

Having shown in a former report that among 66,000 troops 80 per cent of the cases occurred in connection with insanitary methods of washing mess-kits,* and, in a subsequent report, that among 21,000 civilians 84 per cent of the cases occurred among those eating from handwashed dishes,† it was believed that further studies should be made with the purpose of determining the relations of dishwashing methods to the incidence of influenza in institutions composed of certain fixed groups. Such institutions furnish large permanent groups of individuals who eat from either handwashed or machine-washed dishes, while the institutions themselves are comparable in other important factors to health in their modes of life.

Questionnaires were addressed to many public institutions throughout the United States, nearly 500 replies were received, and of these 370 form the basis of this report. The replies not used included those with a very small number of cases (less than 3), and those in which obviously defective or inaccurate information was given. The institutional population on which the report is based is 252,186.

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*Lynch and Cumming: The Rôle of the Hand in the Distribution of Virus and Secondary Invaders. Military Surgeon, December, 1918.

†"Lynch and Cumming." The Distribution of Influenza by Indirect Contact and Eating Utensils. Am. Jour. Pub. H., January, 1919.

Table I presents the consolidation of replies from 115 institutions in which machinewashing is employed and in Table II similar data are given for 255 institutions practising handwashing. In connection with the last column in Table I, it is to be noticed that in less than half the institutions were there definite instructions given to use scalding water. Some replies show lack of appreciation of the needs of the occasion, one manager stating that it was the practice to disinfect all the dishes once a month, while another acknowledged that, although instructions were given to scald the dishes scalding water was never available.

In support of our contention with reference to the comparative facility with which contagion is spread by means of improperly washed dishes, Chart I shows by classes the marked differences in the incidence of influenza between institutions employing machines and those in which handwashing was the practice. The institutions represent almost every state of the Union, and all classes of inmates. It will be noted that the ratio of infection in the two groups is approximately 1 to 3, *i. e.*, 75 per cent of the cases of influenza occurred in that group eating from handwashed dishes.

There is one point to be emphasized here. There is a difference between this major avenue of transmission in the army and in civil and institutional life. In the army the mess gear is used by one man only and the avenue of infection is through contaminated mess-kit wash water. In institutional life the major avenue is through the interchange of contaminated

TABLE I.

INSTITUTIONS IN WHICH MACHINEWASHED EATING UTENSILS ARE USED.

	Population	Influenza Cases	Rate per M.	Average Duration in Weeks	Daily Rate of Infection	Pneumonia Cases	Pneumonia Deaths	Pneumonia Mortality per 1,000 Cases Influenza	Mortality per 1,000 Population	Number of Kitchens in Each Class of Institutions	Instructions to Use Boiling Water	
											No	Yes
Aged	3,247	156	48.05	2	3.4	9	4	25.6	1.2	13	2	2
State hospitals	42,938	4,071	94.8	6.4	2.1	793	505	124.	11.8	367	20	11
State prisons	17,917	1,621	90.7	4.6	2.8	206	110	61.3	7.4	224	8	13
Federal prisons	3,198	516	161.5	9	2.6	60	13	25.2	4.07	7	2	1
Tuberculosis sanatoria	10,204	1,324	129.7	4.5	4.1	250	158	119.	15.5	114	25	18
Feeble-minded	2,585	507	196.2	8.5	3.3	134	55	108.	21.2	27	0	2
Children	4,659	1,124	241.2	4.5	7.7	42	34	30.2	7.3	40	7	4
Total	84,748	9,319	108.9	5.1	3.05	1,194	879	94.2	10.4	792	64	51

TABLE II.

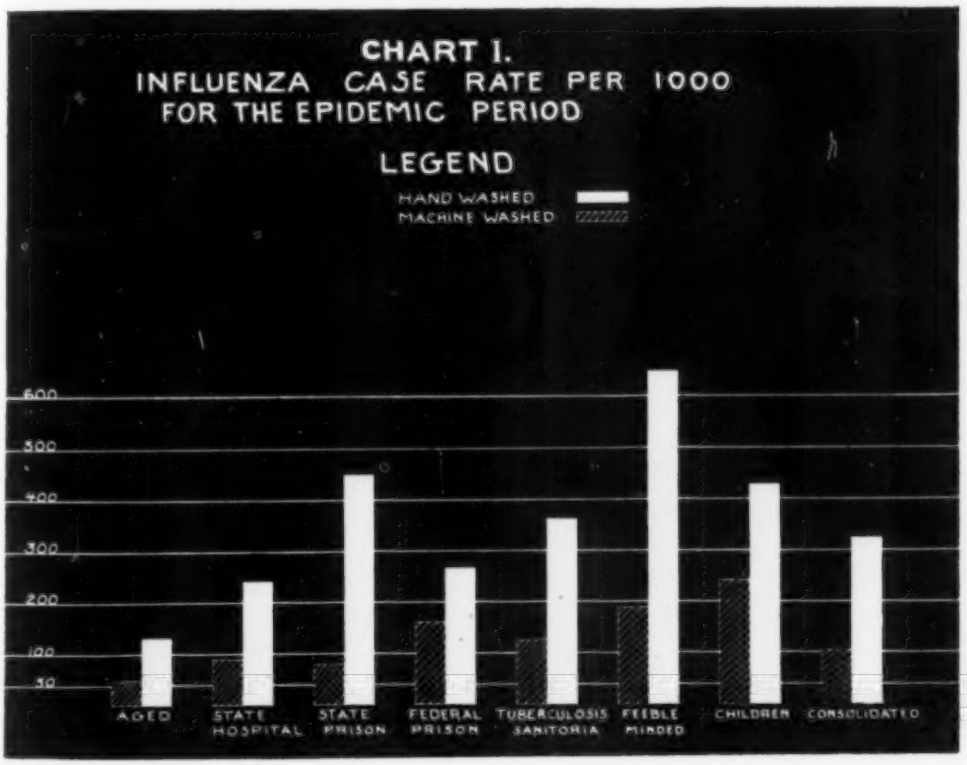
INSTITUTIONS IN WHICH HANDWASHED EATING UTENSILS ARE USED.

	Population	Influenza Cases	Rate per M.	Average Duration in Weeks	Daily Rate of Infection	Pneumonia Cases	Pneumonia Deaths	Pneumonia Mortality per 1,000 Cases Influenza	Mortality per 1,000 Population	Number of Kitchens in Each Class of Institutions	Instructions to Use Boiling Water	
											No	Yes
Aged	1,503	202	134.3	4	4.8	16	14	79.5	10.6	27	1	0
State hospitals	102,614	25,036	244.0	5.6	6.2	3,768	2,288	91.4	22.3	1,200	21	69
State prisons	12,345	5,567	450.9	5.3	12.1	591	234	42.0	19.0	157	23	9
Federal prisons	5,562	1,488	267.8	6	6.4	251	97	65.1	17.4	14	2	3
Tuberculosis sanatoria	3,518	1,280	363.5	4	13.0	79	87	68.0	24.8	51	4	5
Feeble-minded	12,313	8,010	650.5	4.6	20.4	1,099	872	108	70.0	137	13	6
Children	29,583	12,814	433.1	3.2	19.3	730	237	18.5	8.01	186	59	40
Total	167,438	54,397	324.8	4.5	10.3	6,532	3,831	70.4	22.9	1,772	123	132

eating utensils. Minor avenues in the army, civil and institutional life are through inanimate objects by the hand and mouth route and to a lesser degree by direct contact. We contend that in civilian communities this sputum-borne infection is primarily a crowd messing infection in public eating places, and secondarily a home messing infection.

By blocking the major avenue of transmission, the greater percentage of cases is eliminated, namely those due to convalescents and carriers. This reduces the number of sources of infection and their resultant secondary cases. By completely closing the major avenue of transmission, there is a reduction in inanimate object contamination and the resultant hand to mouth infections.

The daily rate in the different groups is interesting as shown in Chart II. In the army camps, although the duration of the outbreak in divisional camps was about three weeks, the individual companies showed an explosive tendency, 80 per cent of the spread being effected in a period of not more than three days. In contrast to this there was the comparatively slow and gradual spread in civil communities. The epidemic extends over a period of eight to twelve weeks and is due primarily to mass infection in public eating houses, but to a less degree than among troops, for in restaurants, the eating utensils only are responsible for distribution. Among troops, both utensils and the hand are distributing agents. In institutions the rate of transmission is directly related to the interchange of contaminated utensils. In the army the daily rate of infection was approximately 18 per 1,000; in public institutions, 10 per 1,000 and in civil communities, less than 1 per 1,000. These varying rates are in the main not



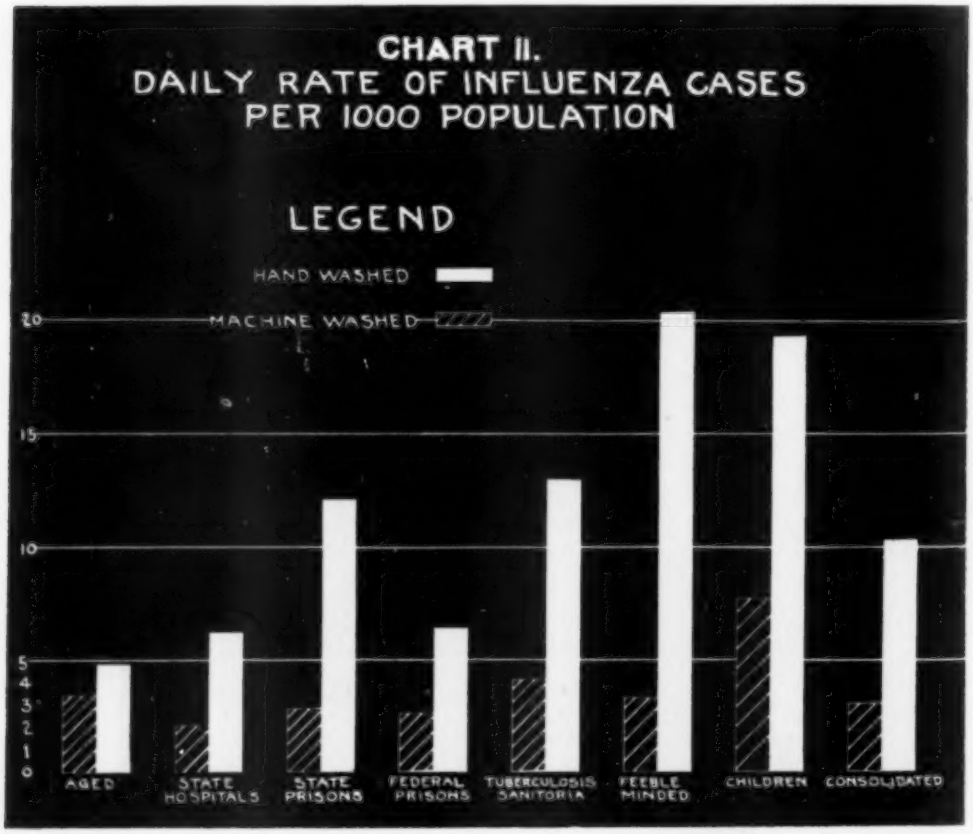
influenced by the density of population. In the first two classes the rates pertain to large fixed messing groups. On the other hand, among the civil population, while there are many public messes, they are in the main composed of innumerable small messing groups in the homes.

In Chart II the daily rate of influenza cases per 1,000 of population varies in the different classes of institutions, and in the two groups of each class according to method of washing eating utensils.

Conclusions.

The mass of material collected is too great to be presented *in extenso*, but facts and figures in hand lead to the following conclusions:

1. Transmission of the potentially dangerous group of pneumonia-producing organisms, incident to promiscuous messing in the army, in public institutions, in public eating places, and in the home, can be largely prevented by the disinfection of eating utensils with scalding water. The universal application of the principle of proper eating-utensils disinfection will reduce enormously the prevalence of all sputum-borne infections. As is shown in the institutional population, the influenza case rate was reduced by 66 per cent and the mortality by 55 per cent through the use of machinewashed dishes. It is believed that a further reduction in these rates would have occurred had the full efficiency of all mechanical dishwashers been utilized by the use of boiling water. This principle applies to public eating places, as well as to public institutions,



and with equal force to the scalding of eating utensils in the private family.

2. The pneumonia mortality rate resulting from the influenza epidemic was greater in public institutions than in the army or in civil population. This is chiefly due to the large messing groups and the lack of sanitary dishwashing.

3. In that group of institutional population protected by machinewashed dishes, the incidence of influenza was only 25 per cent of the total institutional cases.

4. The case fatality rate was higher in the protected group showing that pneumonia carriers are more susceptible than non-carriers to virus infections.

5. In the protected group there occurred but 31 per cent of the total population mortality.

6. The incidence of influenza was highest in that class composed of children, both normal and feeble-minded.

7. Although the influenza incidence was highest among children, yet the case fatality rate, as well as the population mortality rate, was lowest in the class composed of normal children, showing that in this age class there was a low pneumonia carrier rate.

8. The mortality rate corresponds to the age group, feeble-minded excluded, and depends upon the different rates of pneumonia carriers in the several age groups.

9. The mortality rate in institutions is greater than in the army, or civil population, because of prolonged exposure to pneumonia transmission incident to crowd messing, and lack of sanitation of eating utensils.

10. The fatalities being due to pneumonia and dependent upon the carrier state, there are two capital methods of prevention; first, limiting the number of carriers by blocking transmission at the common mess through the use of scalded eating utensils; second, by removal of the tonsils.

11. The sputum borne infections can be effectively controlled by blocking the major avenue of transmission. The majority of influenza cases have arisen from the interchange of sputum, through contaminated eating utensils. By the elimination of this large group of cases there results an equal elimination of inanimate object contamination as well as a blocking of the major avenue of transmission, thus reducing hand-to-mouth infection in proportion to the reduction of cases having their origin from eating utensil contamination. The distribution of infection from the secondary case is limited to only minor routes which are of slight importance.

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"MAJOR" DIXON ON DUTY.

This view presented through the courtesy of Mr. C. A. Abele, shows the outfit and employee in the work of oiling the streams at Jackson, Miss.

PUBLICITY AND THE CAMPAIGN AGAINST VENEREAL DISEASE.

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No health officer can afford to ignore the educational value of publicity. But such announcements are so foreign to old-fashioned medical ideas that publicity is needed to give publicity its proper place. This author does good missionary work in outlining what publicity is doing for his specialty. : : : : : : : : : : :

IT is a famous saying, attributed by some to Emerson, by others to Hubbard, that "If a man write a better book, preach a better sermon, or make a better mousetrap than his neighbor, though he build his house in the woods the world will make a beaten path to his door." Notwithstanding this observation, it is now recognized that even the most meritorious article requires widespread publicity to reach a maximum record of sales. Even though the trap in question caught, killed and buried its quarry automatically its popular distribution would depend upon the manner in which it was press-agented.

The United States government has seen the light regarding this elementary truth of salesmanship and has applied it to an extent heretofore deemed impossible. In the course of war preparation it rubbed the magic lamp of publicity early and often with amazing results. Workers flocked to government industries, men and boys vied with each other in joining the Army and Navy or "telling it" to the Marines; war gardens sprung up in every community, and billions in Liberty Bonds were purchased by an aroused nation.

All of these activities were meritorious and all were essential if we were to do our share in winning a great war, but these facts, in themselves, would not have been sufficient. It took broadside after broadside of paid advertisements and editorial warnings, flights of airplanes and flights of oratory, tons of letters, pamphlets and posters before the nation could be brought to a complete realization of the vital issue which imperiled its very existence.

Publicity was formerly considered a more or less valuable feature in connection with the carrying on of a regulation business, formed and run for the sole purpose of making money, but only in recent years has its true value been appreciated from the standpoint of selling such intangible things as *ideas* and *attitudes*. The wonderful campaign against tuberculosis was one of the first to feature its altruistic and educational value.

When Hiram and Mary Jones were first told that rest, plenty of nourishing food and, above all, fresh air, day and night, were the most effective remedies in fighting the white plague, they openly scoffed at these "new fangled notions." Didn't they know that "Dr. Dingbat's Pulmonary Syrup" was the only thing that cured the deacon's hired man of consumption? Were they going to be deluded by "such talk" into admitting the "poisonous night air" into their sleeping quarters? Not they!

But several years of the right kind of publicity, the constant hammering home of proved truths, have convinced millions of Hirams and Marys that Trudeau and the devoted body of men who have followed him in the work, knew whereof they

spoke. The marvelous decrease in mortality due to tuberculosis,—the thousands of cases where the ravages of the disease have been arrested and the sufferer returned to a place of use in the community,—these are some of the benefits ascribed largely to broadspread publicity.

In one way the campaign against venereal disease has been placed at a great disadvantage from its very start. Other diseases, though unpleasant subjects for discussion, *have been* discussed, openly and fairly. Efforts toward eliminating them have not been handicapped by a confusion of moral and medical aspects or an attitude of pseudo-modesty. The terrible physical effects of syphilis and gonorrhea, however, have been left during the years for the consideration of the medical profession and a small group of persons engaged in social welfare work. The Japanese simian trinity of wisdom, so often seen in curio shops, modelled in metal or in wood and acting out the three admonitions,—"See no evil; speak no evil; hear no evil," aptly characterizes the age-old attitude regarding the venereal diseases and their main source of supply, commercialized prostitution.

These were the conditions under which the pioneers in the fight were compelled to labor. Organizations were obliged to depend on lectures and a small scale distribution of literature as practically the only means for reaching an uninterested public and great credit is due those early workers for driving the opening wedge. Slow but certain progress was made during the early years of the twentieth century but the past three years have witnessed an advance by leaps and bounds. The reasons for this marvelous advance are summed up in the one trite expression, "c'est la guerre."

When our army authorities were compelled to face the stern realities of the venereal problem during the days of mobilization and the newspapers of the nation realized that millions of mothers, fathers and other loved ones were becoming vitally interested in anything and everything which might affect the health and welfare of their boys, the word "venereal" began to find its place in the columns of the public prints. Disguised occasionally as "blood diseases," "social diseases," "loathesome diseases," or by other misleading designations, syphilis and gonorrhea began to receive a portion of that attention to which their prevalence and seriousness entitle them.

While the military forces, whether in camp on this side or overseas, were receiving the benefits resulting from the government's program of law enforcement, medical measures, recreation and education, our civilian communities were also hearing and learning more of this program, the "American plan," for the control and prevention of venereal diseases. While the Army was being told how and why it must keep fit to fight and fit to return home, the community was being told of its duty to provide a cleaner home for the boys to return to.

In upwards of one hundred and fifty cities and towns throughout the country red-light districts were abolished, this step aiding greatly in reducing the number of infections. The publicity given to these measures, particularly the disclosures regarding the number of prostitutes found after medical examination to be infected with syphilis, gonorrhea, or both, brought home to many localities the necessity for a continuation of repressive measures in dealing with the red-light.

"Do your bit to keep him fit" was the slogan drilled into the minds of thousands who were unable to participate actively in the war. Thousands of patriotic men and women in communities contiguous to military reservations received personal letters enclosing literature calculated to

appeal to their public spirit as well as their sense of civic pride. In other places where officials were lax and law enforcement at a low ebb committees were formed to prod these officials into activity.

An important percentage of men and women who never before had thought seriously concerning syphilis and gonorrhea, were told in straight-from-the-shoulder language the truths so familiar to physicians and social workers. They were informed of the locomotor ataxia, paresis and insanity resulting from syphilis; of the blindness in babies, the sterility, and the large number of female operations caused by gonorrhea. But, on the other side, the "joys" also had their innings. These same people were told of the wonderful advances made by the medical profession in curing these diseases. They were impressed with knowledge that the same American plan which worked so well in the Army can be applied to their own communities with like good results.

The Chamberlain-Kahn Bill appropriating $4,100,000 for fighting venereal diseases has given the campaign a great impetus. The portion of this appropriation allotted to the United States Public Health Service and, through that agency, to the individual states has enabled both national and state agencies to prepare and distribute the most helpful kind of educational literature. Though this is but one branch of the Public Health Service's activities it distributed, in conjunction with the various state boards of health, more than 14,000,000 pamphlets during the twelve months ending June 30, 1919.

It has also secured an inestimable amount of the right kind of publicity through such other sources as motion picture showings, talks in industries, framed placards in railroad stations and coaches, lectures before organizations, churches, schools, etc., and special sermons from 2,302 pulpits.

A number of the state boards of health have used paid advertising space in their newspapers with gratifying results. Local organizations have shared in the expenses in some instances and this coöperation serves the doubled purpose of making the state's appropriation cover more ground and interesting personally the members of contributing organizations such, for instance, as chambers of commerce, Rotary and Kiwanis clubs, and other local bodies working for civic betterment. When the so-called "conservative" citizens of a community open their newspapers and are confronted with a full page ad informing them that their state went "*over the top with her full quota of venereal disease*," when, as an argument against the red-light district, they are confronted with the pertinent query, "Have you a daughter to spare?" they begin to realize that the nation-wide campaign against syphilis and gonorrhea is not some vague, intangible thing to which their local affairs are only distantly related, but a vital, pulsating movement which is closely linked to the efficiency, welfare, and health of themselves and their neighbors.

Then again, when a local clinic is established, the question usually arises in the minds of those responsible for its success or failure, "How can the facilities of this clinic be made of most value to the people at large?" And again the concensus of authoritative opinion answers, "Through publicity." That arch enemy of public health, the quack, has always depended on advertising to build up his malodorous practice. He may well be fought on the battlefield of his own choosing. A small ad inserted in the same column as that of the quack's directly above or below if possible, telling the advantages of the public clinic and warning the sufferer

against the type of treatment dispensed by the bogus medicos has proved effective in many states and municipalities. This should be supplemented by posters and cards, giving the location and hours of the clinic and a brief résumé of the symptoms of venereal diseases, posted in public places and industrial lavatories, and distributed to those men and women in need of such information.

The Army and Navy are continuing the policy inaugurated as a war measure and their medical officers are constantly endeavoring to make the anti-venereal program more comprehensive and effective throughout the service. The numerically greater civilian field is also receiving unremitting attention from authoritative sources.

Besides the United States Public Health Service, there are two other organizations aiding in the conduct of the campaign nationally. One is the United States Interdepartmental Social Hygiene Board, a governmental body; the other is the American Social Hygiene Association, a private corporation, non-profiting and supported wholly by voluntary contributions. The former, besides operating a corps of trained field agents, is engaged in stimulating research work among the schools and colleges of the country for the purpose of learning new methods for preventing and controlling the venereal diseases.

The American Social Hygiene Association, in coöperation with the two governmental agencies, is pushing the adoption of the American plan throughout the nation. Through its various departments it is aiding communities to wage up-to-date campaigns and to put into effect the law-enforcement, medical, recreational and educational features which make up the plan.

Its Department of Public Information, as the publicity department is called, is constantly at work preparing new material, pamphlets, posters, statistical data, and other "ammunition" for use in local campaigns. The main purpose of this department is to procure all possible publicity for the national campaign. In the performance of this work the needs of the ninety and nine are deemed of paramount importance and this department's material is written in non-technical language, using to a great extent the layman's psychology. John Smith does not know a primary lesion from a hole in the ground but when he is told, in simple language, of the ravages of syphilis and gonorrhea,—of the blind babies, invalid wives, and paralytic insane due to these plagues; when he is told further the symptoms of venereal diseases and that they are both preventable and curable, he will usually act upon the implications and act rationally, in the light of his newly acquired knowledge.

Only a few days ago in discussing this subject a doctor in a good sized New England city remarked, "You and many others connected with social hygiene work are too optimistic over what has been done and what you hope to accomplish. As far as I can see all you are doing is to drive more venereal disease cases to the doctors." He then mentioned the number, an astoundingly large one, of patients treated at the venereal disease clinic in his city during the preceding month.

Even taking this physician's estimate as *all* that publicity has accomplished in the fight would it not have proved a strong case for the advocates of this measure? But if this same man and the hundreds like him could but look over the mail arriving at the Association's offices* during the course of a single week,—if he and they could know of the hun-

* 105 West 40th Street, New York City.

dreds of requests from individuals and communities for "publicity to help us in preventing a return of the red light district," "publicity to aid us in obtaining a clinic," "information as to the treatment of syphilis and gonorrhea," "a set of literature for the use of an editor who wishes to help in the campaign," "suggestions for a placard to advertise our local clinic," and hundreds of other communications regarding all phases of the combat against prostitution, syphilis and gonorrhea, they would concur in that old sentiment, "The world *do* move," and credit publicity as one of the main accessories in the moving process.

VITAL STATISTICS SHOULD NOT DEVOLVE UPON THE PHYSICIAN.

We are all familiar with the inadequacy of the present methods adopted for securing reports of notifiable diseases, births, deaths, etc. While the laws in most states require that certain persons having knowledge of the same are obligated to report to the health authorities, in actual practice the vast amount of first-hand information contained in these reports is furnished by physicians. Although standard forms and methods are devised by officialdom to facilitate these reports, there is the greatest difficulty in securing completeness and the same standards of information from each of the thousand and one physicians concerned.

The purpose of securing the information is to assist the public demand that certain records of great value to the public be kept. Therefore, society in general demands these reports. Likewise society is willing to pay for the costs involved in securing the same whenever it is made plain that such is part of the public's bookkeeping. Hence right here lies the flaw in the present system. The physician who usually is unskilled in clerical and statistical matters, and who cares little to be a clerk anyway, is requested by laws laid down by the people to perform a good share of public bookkeeping "for the good of the human race," and do this gratis, and then we expect good service. As has often been pointed out, no lawyer or person in other walk of life would do the same or be expected to do the same without at least provision for compensation. Furthermore, it is improbable that any large group of society, for instance a hundred thousand physicians, can ever be trained to be clerks or inspectors and all come up to the desired standards. While it is all well enough for the physician to be the health officer of his own clientele, when the case involves the direct public welfare, the public's regularly appointed officer should officiate as far as the public is concerned. The solution would appear to lie in another direction, which is this: When the physician or other person runs across a notifiable disease, he has really performed his duty when he reaches for the nearest telephone and notifies the nearest public health official, in the same manner that a person would notify the police department of a crime or the fire department of a blaze, supplying simply the briefest identification information. Thereafter it is the business of the public health officials to investigate the "call" and secure at that time whatever information they desire in accordance with the laws and regulations of their office. The most that should be expected of the physician-notifier is that after the case is investigated, he attach his signature to the diagnosis feature of the record, which is merely to complete the evidence and can be done within a period of reasonable promptness, by calling upon him at his office or requesting him to step into the local health office once a week for the purpose. The value of such contact to public health officials and to physicians must also not be overlooked.

As soon as it becomes clear to the public that a local health officer is not well enough supported financially to hire the personnel to take care of his books or "cover his beat," and as soon as it can be made clear that the responsibility does not consist in "passing the buck" to the physician, funds will be forthcoming to meet the situation in the same manner that funds are forthcoming to provide for sufficient police or fire protection. Even where, at present, remuneration is allowed physicians-in-private-practice for doing such clerical and investigative work, it is misplaced; it should instead be given to the health office.—E. R. H.

A CRITICAL STUDY OF SOME METHODS PROPOSED FOR THE LIBERATION OF FORMALDEHYDE GAS FOR FUMIGATION PURPOSES.*

EDMUND K. KLINE, A. M,
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FORMALDEHYDE disinfection is widely used and recognized as a most convenient and efficient method of fumigation. However, the rising cost of the potassium permanganate hitherto used has necessitated a search for a cheaper and more easily obtainable substance, which might be substituted for it as a means of liberating formaldehyde gas from its solution in water.

This department in 1915 recommended the substitution of sodium dichromate with the addition of sulphuric acid to the fluid,† and later advised the addition of glycerine as an anti-polymerization agent. This method‡ has proved considerably cheaper and entirely as trustworthy as the older permanganate method, both in this department and elsewhere excepting that it is necessary as we shall later show to use a greater quantity of the reagents than were originally recommended by us. Recently it has been suggested that the cost might be further decreased if calcium hypochlorite or bleaching powder were used in the place of the permanganate or dichromate. Horn§ reports successful results in over 2,000 rooms by this method.

In order to determine the value of this procedure, tests were carried out in this laboratory upon the gas liberated by pouring formaldehyde solution upon bleaching powder; to determine so far as possible:

1. The percentage of formaldehyde gas liberated.
2. The percentage of chlorine gas liberated.
3. The efficiency of this gas as a disinfectant.
4. The chemical action of this gas upon the contents of the room.
5. The comparative value of this and the older methods.

CHEMICAL DETERMINATIONS.

There are, generally speaking, two methods of determining chemically the amount of formaldehyde gas liberated by a reaction. Firstly, by withdrawing a measured amount of gas from a room during fumigation and determining the amount of formaldehyde gas in that atmosphere, and secondly, methods attempting to determine the total amount of gas liberated from a given quantity of reagents by absorption of all the gas liberated. Since the first method fails to make allowance for the fact that formaldehyde readily condenses on exposed surfaces, walls, etc. (in fact it is on these surfaces that the actual germicidal action takes place), it has seemed best to us to attempt to determine the total amount liberated rather than the amount present as a gas in the atmosphere of a room at any specific time.

METHODS OF ABSORPTION.

To determine the amount of formaldehyde liberated two methods of absorption were used.

First. A small charge of the substance to be used as a liberating agent was placed in a small receptacle suspended in a 750 cc. bottle which was connected with a series of absorption tubes containing water. The required amount of formaldehyde was then placed on the dry salt by means of a pipette through a

* Experiments conducted at the Laboratories of the Pennsylvania State Department of Health.
† Ann. Report Comm. of Health of Pa. 1915.
‡ Ann. Report Comm. of Health of Pa. 1915.
§ Horn, Am. Jour. Public Health, viii, p. 161. 1918.

small hole in the stopper of the bottle and this hole was promptly sealed with a paraffined cork. A slow current of air was then drawn through the whole apparatus for at least four and usually six hours. By that time all of the gases liberated had been swept out of the bottle into the absorption tubes as shown by the fact that no odor of formaldehyde nor of chlorine could be detected immediately upon removing the cork. There was, however, a residual amount of formaldehyde remaining in the residue which was spontaneously evolved, but only in small amounts.

It was our experience, confirming McClintic* that the use of potassium cyanide solution, which absorbs formaldehyde in the absorption tubes was rather unsatisfactory owing to a slight oxidation of the solution by the air current, and also to its volatility as it requires an after-tube of silver nitrate solution to prevent the loss of some of the potassium cyanide through the pump. However, water was found a very satisfactory medium of absorption (see McClintic). After running the air current several hours, no formaldehyde could be detected in the last tube by testing with fuchsin-aldehyde reagent, a solution of fuchsin decolorized by sulphurous acid which is a very sensitive indicator of the presence of aldehydes.

In working on a very hot summer day, we experienced low results and found on investigation that the formaldehyde at high temperatures volatilized more readily and was carried through the entire series of seven tubes, some of it being lost through the water pump. It was deemed best on hot or very warm days to surround the absorption tubes with cracked ice. This permitted a very rapid aëration and absorption without the loss of any formaldehyde.

The second method of absorption was more simple. It consisted of placing the potassium cyanide solution in a large bottle closing it with a stopper from which was suspended a small cup, placing a "charge" in that cup and then adding the formaldehyde solution from a pipette through a hole in the stopper and afterwards closing this hole with a cork.

Upon allowing this bottle to stand for three or four hours with occasional shaking, apparently complete absorption took place as evidenced by the absence of a formaldehyde odor upon opening the bottle.

In working with these methods we used such charges of material as would require 1 cc. of formaldehyde solution. In permanganate tests 0.5 gm. of the salt was used with the 1 cc. of formaldehyde. With sodium dichromate .55 gm. of the salt to 1 cc. of formaldehyde mixed with 0.1 cc. of sulphuric acid and 0.1 cc. of glycerine; the proportions previously recommended by this department. With bleaching powder we used 0.775 gm. of the powder to 1 cc. of formaldehyde, the ratio recommended by Horn.

Chemical Calculations.

In the chemical determinations we made use of the Romijn method for the determination of formaldehyde in solutions. Potassium cyanide solution is used to absorb liberated formaldehyde; the excess of potassium cyanide is precipitated by an excess of silver nitrate solution and the amount of silver nitrate thus used is determined by titration with ammonium sulphocyanate solution.

The method may be illustrated by explaining a determination of the amount of gas liberated in one of our bottle determinations. The gas liberated was absorbed in 20 cc. of N/10 KCN solution.

* McClintic, Bull. No. 27, Hygienic Lab.

This solution was then poured into an excess, 20 cc. of acidified N/10 silver nitrate solution. This was diluted in a volumetric flask to 200 cc. and the heavy precipitate removed by filtration through a dry filter into a dry flask; 100 cc. of this filtrate was then titrated to determine the excess of silver nitrate present by means of a N/10 solution of ammonium sulphocyanate, using ferric alum in the presence of nitric acid as an indicator.

The amount of formaldehyde present was then determined by the following procedure:

Multiply the amount of NH_4SCN used by 2.
Subtract result from the amount of $AgNO_3$ used = The amount of $AgNO_3$ absorbed by the KCN.
This amount of N/10 $AgNO_3$ is also the amount of N/10 KCN uniting with the $AgNO_3$.
Subtract from the total KCN to obtain amount of KCN uniting with the formaldehyde.
Multiply by 0.00297 (weight of formaldehyde equivalent to 1 cc. N/10 KCN solution) to obtain the total amount of formaldehyde present in the original solution.

In determining formaldehyde in the bleach-formalin gas which also contains chlorine it is necessary to modify the procedure. Although chlorine does not enter into combination with KCN it is absorbed by the solution so that the solution obtained after absorbing a bleach-formalin charge will contain both formaldehyde and chlorine gas. This chlorine will, of course, enter into combination with the $AgNO_3$ solution used.

Determinations on the amount of chlorine liberated were made by exposing standard silver nitrate to the fumes and then titrating the excess of $AgNO_3$. It was found that a charge of 0.775 gm. of bleach and 1 cc. of formalin liberated chlorine equivalent to 1.8 cc. of $AgNO_3$.

As controls we exposed standard $AgNO_3$ to the gas liberated by a permanganate-formalin charge and found that its titre was unchanged. Furthermore the addition of a solution of formaldehyde to a standard solution of $AgNO_3$ did not change its titre.

Therefore, in calculating results of formaldehyde-chlorine mixtures resulting from the action of 1 cc. of formalin on 0.775 gm. of bleaching powder, use the following procedure:

Multiply the amount of NH_4SCN used by 2.
Subtract from the total $AgNO_3$ to obtain the amount of $AgNO_3$ absorbed by both the KCN and the chlorine.
Subtract 1.8 cc. (the amount absorbed by the chlorine) to obtain the amount absorbed by the KCN.

and proceed as above.

Chemical Results.

Results of the two methods of absorption agreed very well indeed, but in general results by the first method were a trifle lower than results of similar determinations by the second method.

Individual determinations also checked with similar ones very well. Deviations were never beyond the limits of experimental error.

We report our results in general averages rather than entering into a great mass of detail, these averages are results of several determinations in each case and of determinations by the different methods.

Liberating agent.	*Formaldehyde liberated.*
Permanganate.....	60–62%
Dichromate.....	29–31
Bleaching powder.....	25–26

Chemical determinations of the amount of chlorine liberated as previously explained show that using 0.775 gm. of bleaching powder to 1 cc. of formalin the chlorine liberated was equivalent to 1.8 cc. of N/10 $AgNO_3$ solution, that is equivalent to .0063 gm. of chlorine gas, which is liberated together with a maximum of .260 gm. of formaldehyde. That

is about 2.3 per cent of the gas liberated from a bleach-formalin charge is chlorine gas.

Discussion.

We know of no literature bearing on the amount of formaldehyde liberated by the dichromate or bleaching powder methods, but numerous reports have been published concerning the yield with permanganate.

McClintic* reports yields averaging 37.5 per cent with permanganate, working with air drawn from a room during fumigation. It has been previously explained that formaldehyde has a strong tendency to condense on surfaces exposed to it, and therefore, it seems proper that we should obtain considerably higher results by methods that aim to measure the total amount of formaldehyde generated rather than the amount of formaldehyde gas present in the air at any particular time. This is confirmed by the results of some other investigators who have obtained results fairly concordant with our own.

Holm and Gardener† report that after a reaction of 30 minutes the amount of formaldehyde obtained from a mixture of 5 parts permanagnate to 10 parts formalin was 58 per cent and in a 7 to 10 ratio the percentage yield is 67 per cent.

They also worked with methods concerning the amount of gas present in the atmosphere of a room and report the following results:

Time after mixing.	*Formaldehyde obtained.*
10 min.	39.7%
1 hour	19.5
3 "	15.3
6 "	12.3

They refer to the work of Von Brumn‡ who obtained 16.94 per cent and who advanced the theory that the remainder was left absorbed on the sides of the room.

Frankfurter in reporting the amounts of formaldehyde liberated by mixtures of sand and permanganate gives the following table:*

Minutes of reaction.	*Formaldehyde liberated.*
80	65.96%
60	68.06
45	73.11
30	74.56
15	73.56
10	70.48

Hill,† working with a large apparatus, absorbing in water and finally washing down the sides of the receptacle, obtained from a 7 to 10 permanganate formaldehyde mixture from 62 per cent to 65 per cent formaldehyde.

The chemical action involved in the bleaching powder formalin mixture is obscure and because of a lack of time this phase of the subject could not be thoroughly investigated.

The chemical reaction involved in the bleaching powder formalin mixture is obscure and because of lack of time this phase of the subject could not be thoroughly investigated. However it should be noted that while, when working with large batches of this material a very violent reaction with considerable frothing and a marked production of heat occurs, in smaller batches the reaction is much less violent and considerably slower; so that if heat production is an important factor in accelerating liberation of formaldehyde the actual percentage of gas liberated in fumigating a room is somewhat more than the percentage determined in these experiments.

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* McClintic, Bull. No. 27, Hygenic Lab.
† Holm & Gardener, Jour. Inf. Dis., vii, p. 641. 1910.
‡ Von Brumn, Zeit. f. Hyg., xxx, 201. 1899.

* Frankfurter, Am. Pub. Health Assn., Reports xxii, 113. 1907.
† Hill, Am. Journ. Pub. Hyg., xix, 576. 1909.

BACTERIOLOGICAL DETERMINATIONS.

In order to determine the efficiency of the bleach-formalin gas as a disinfectant experiments were carried on to test its ability to act as a germicidal agent.

A large bottle with a capacity of about $1\frac{1}{2}$ cubic feet was fitted with a stopper to which was suspended a small cup in the same manner as the smaller bottle described under the head of chemical absorption apparatus.

Test papers were prepared by soaking small strips of filter paper in broth cultures or emulsions of the organisms to be used and subsequently drying these papers in the incubator for an hour.

These papers were now suspended on strings and placed in the bottle so that they hung about two thirds of the distance from the stopper to the bottom of the bottle. A bleach "charge" was then placed in the small cup and the formalin added as before. At intervals after the beginning of the reaction the cork was lifted up and one of the strings of test papers withdrawn from the bottle, replacing the stopper as rapidly as possible. Of course small amounts of gas escaped each time, but after a little practice, it was found possible to withdraw the samples very rapidly and the method as a whole seems to be very satisfactory.

Several experiments were tried using test papers of B. Coli as an example of non-spore bearing organisms and of B. Subtilis (two month ager slants) as an example of spore bearing organisms. A table typical of all our results follows:

Capacity of bottle, 47 liters, 1.66 cu. ft.
Gms. of bleaching powder, 1.03
Cc. of formalin, 1.30

Time	B. Coli	B. Subtilis
15 min.	++	++
30 "	+	++
45 "	+	++
1 hr.	−	++
1 " 30m	−	+
2 "	−	+
2 " 30m	−	±
3 "	−	−
3 " 30m	−	−
4 "	−	−

From this we may conclude with Horn (*loc. cit.*) that the gas resulting from mixing bleaching powder with formalin is germicidal and may be used for fumigation purposes.

Of course whenever formaldehyde gas is used for fumigation care must be taken that the proper amount of moisture is present and that the temperature is not too low.

To further test the action of the gas under practical conditions a room was disinfected several times. This room had

Size of room, 1,660 cu. ft.
Bleach used, 2 lb. 5 oz.
Formalin used, 1,666 cc.

Location in room	Approximate distance from source	Height	B. Coli	B. Typhosus	Organisms		B. Diphtheriæ	B. Subtilis
					Streptococcus	Staphylococcus		
Bed	4 ft.	1 ft.	−	−	−	−	−	−
Chair	3	1	−	−	−	−	−	−
Bureau	5	4	−	−	−	−	−	+
Under bureau	5	0	−	−	−	−	−	+
Mantel	4	5	−	−	−	−	−	+
Table	3	3	−	−	−	−	−	−

a capacity of 1,660 cubic feet and was charged with 2 pounds 5 ounces of bleaching powder and 1¾ liters of formalin. Test papers of several organisms were exposed at different places in the room at various distances from the bucket in which the reaction was taking place and at various heights from the floor. The room was then tightly sealed, the reaction started and left for a time. At the end of 4 hours the room was opened and the test papers exposed in petri dishes were removed and planted in the proper media.

Results were concordant and on the whole satisfactory; all non-spore bearing organisms were killed and some of the spore bearers, but in those parts of the room furthest removed from the reaction pan, B. Subtilis spores showed growth after several days incubation.

The table at bottom of page 863 is typical.

Chemical Action on Contents of the Room.

To test the chemical action of the chlorine-formaldehyde gas mixture liberated by bleaching powder on the contents of a room, several samples of delicately colored silks and crêpe de chênes were obtained and exposed at various parts of the room. It was furthermore thought best to wet some of these samples so as to render them more susceptible to any deleterious action of the gases. It was found that all of the wet pieces were injured by the gases, losing both color and tensile strength, and that those dry samples nearest to the source of the gas were very frequently faded.

Silver and nickle articles exposed lost their polish and became heavily corroded.

Bacteriological and Chemical Action of Dichromate-Formalin Gas.

In order to have a control, samples of the same goods were treated in the same way and exposed in the same room to the action of the gas resulting from treating dichromate with formalin. In no case was any injury detected even in the wet pieces of goods. Nickle and silver articles lost none of their polish.

Bacteriological tests were made at the same time in the same manner as above. We used the proportions of dichromate and formalin hitherto used which, as we have shown, do not liberate as much formaldehyde gas as the old permanganate method; however, it does liberate more formaldehyde than was the case in the bleach-formalin table given above so that any difference in the action on the goods could not have been caused by an increased amount of formaldehyde gas but must be caused by the chlorine gas present.

As we have explained the amount of formaldehyde liberated by this amount of material is not enough in our opinion for a complete efficient disinfection as the following table shows:

Size of room, 1660 cu. ft.
Dichromate used, 17 oz.
Formalin used, 800 cc.
Sulphuric acid used, 80 cc.

Location in room	Approximate distance from source	Height	B. Coli	B. Typhosus	Streptococcus	Staphylococcus	B. Diphtheriæ	B. Subtilis
Bed	4 ft.	1 ft.	–	–	–	–	–	+
Chair	3	1	–	–	–	–	–	+
Bureau	5	4	–	–	–	–	–	+
Under bureau	5	0	–	–	–	–	–	+
Mantel	4	5	–	–	–	–	–	+
Table	3	3	–	–	–	–	–	+

Summary and Conclusions.

Formaldehyde gas can be liberated from its solution for disinfection or other purposes by pouring this solution over bleaching powder, potassium permanganate, or sodium dichromate.

Chemical determinations showed the following percentages of the total gas in solution to be liberated by the various methods:

	Per cent.
Permanganate	60–62
Dichromate	29–31
Bleaching powder	25–26

In these determinations the dry salt and the commercial formalin solution were used in proportions previously recommended.

In the case of bleaching powder about 2.3 per cent of the total gas set free is chlorine gas.

Bacteriological tests showed all these methods to be efficient for fumigatian purposes, with well known limitations so to heat and moisture that must always be applied to formaldehyde as a fumigant.

In the case of bleaching powder the strongly corrosive action of the chlorine gas in the liberated gases is injurious to delicate fabrics and their colors and heavily corrodes exposed metals.

Because of this, we cannot recommend the method for general use; in special cases where such injury would not be objectionable, such as fumigating empty rooms or school rooms it would be quite efficient.

It is necessary to use approximately double the amount of dichromate-formalin previously recommended to obtain an amount of formaldehyde gas equivalent to the amount liberated by the charge of permanganate-formalin recommended.

The proper charge for 1000 cu. ft. is:

20 oz. sodium dichromate.
32 fl. oz. formalin.
3 fl. oz. sulphuric acid.
3 fl. oz. glycerine.

I desire to express my thanks and appreciation for many helpful suggestions and criticisms from Dr. J. B. Rucker, Jr., director of this laboratory.

◆

First TB Election Ordered.—The first election in the United States to decide whether or not a county should eradicate tuberculosis from its herds of cattle has been ordered to be held in Clay County, Miss., on September 2. The election was ordered by the county board of supervisors after a petition asking for it had been presented by a group of citizens.

The results of this election will have much more than local interest, because the election may be the forerunner of hundreds or thousands of others in other sections of the country. (*J. E. L.*)

War Shows Value of Typhoid Vaccine.—Of 2,000,000 men who were sent to Europe during the war, less than 500 developed typhoid fever. This, it is believed, is due to protective inoculation against the disease. If the same rate of infection had prevailed among the American troops that existed during the Spanish-American War, there would have been 384,113 cases and 29,266 deaths from typhoid fever. During the Spanish-American War, 20,738 cases of typhoid fever developed among 107,973 men, of which 1,580 were fatal. The prevailing rate among the soldiers in the Great War was even less than that which is true for the whole registration area. If the rate for the registration area, which is true for males between 20 and 45 years, be applied to the army, there should have been 3,200 cases and 320 deaths from typhoid fever. The low incidence of typhoid fever among the troops is true in spite of the poor sanitary conditions under which many of the troops had to live. The cases that occurred were due to highly infected water supplies or carriers. Thus it seems that if the typhoid infection is heavy and continuous that a previous vaccination will not prove an effective protection against the disease. Not only is it important, therefore, to vaccinate people against typhoid, but progressive and efficient sanitation must accompany vaccination, in order to get complete protection. In this way it will be possible to make typhoid fever as uncommon as smallpox.—*N. Y. Times*, August 19, 1919. (*M. P. H.*)

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PUBLIC HEALTH IDEALS AND SUCCESSES.

The evolution of public health as summarized in the history of the American Public Health Association, presented in a paper by Dr. P. H. Bryce, before the Association in 1916, indicates not only how lowly were its beginnings and how uncertain its methods, but further shows how crude were the most advanced thoughts with regard to the origin and nature of disease fifty years ago. On the other hand, the mere perusal of the programme of the Forty-Seventh Annual Meeting of the Association exhibits in outline the development of public health as illustrated by activities in almost every field in which influences affecting vital processes, whether favorable or unfavorable, may be exercised.

One need only refer to the subjects dealt with in the programme of the general sessions, such as malaria and influenza, to the papers dealing with public health administrative details or to preventive work in the Southern states of the continent, to realize the incalculable value of the practical application of research methods to the investigation of the nature of diseases and to the methods for their prevention. If we turn to the programme of the Sociological Section we find problems dealt with which bear directly upon home life in industries, such as the effects of machinery through monotony as influencing vital forces. Those of the programme of the Section on Industrial Hygiene deal with such questions as determining the physical and mental fitness of the individual for certain types of work, or that of lighting, heating and ventilation as assuring the hygiene of the factory; or to the practical application of science in the field of engineering for the removal of nuisances and the prevention of disease through pollution of water. If we glance at the problems dealt with in the Section on Vital Statistics we can appreciate the splendid progress made in the education of the public to a consciousness of the essential value of human life and the possibility of the ever increasing amelioration of the conditions under which it "carries on."

It is natural, however, that those who have not been fortunate enough to have lived through this period of public health evolution, should not at once be able fully to appreciate the position in which they at times find themselves. They may not be pleased at meeting difficulties when having to deal with ignorance, indifference or self-interest, whether due to the officialdom under which they work or to the public which responds so slowly to efforts in its behalf. Nevertheless such individuals may be encouraged

through a study of the history of the struggle and triumphs of the pioneers in public health and thereby obtain some true sense of proportion as to the place which it bears in the community at large.

Perhaps, however, in no way can an enthusiast in public health work so well realize the advantageous position he occupies today, due to the evolution of public health methods, as by noting the decline in those acute contagious diseases against which the municipal health board was primarily organized to fight. Typhoid within the period of our review was universally endemic over the American continent. New settlements in the west, such as mining camps, were commonly even more ravaged than crowded centres of population, while in all the cities from Washington and Philadelphia to Pittsburgh and Chicago death rates of one to two per thousand were looked upon as natural events. Today many cities look upon a practical freedom from typhoid deaths as not only a possible but an actual occurrence. Similarly it can be recalled that thirty years ago the death rate from diphtheria often reached two per thousand, whereas today a quarter of this number would be looked upon as criminal. If not so striking, owing to the essential differences in the nature of the diseases, yet the decreases in deaths from tuberculosis and the maladies of infancy mark even a higher measure of public health advancement.

Further, although the industrial revolution with its development of modern means for increased production through numberless inventions has enormously increased the amenities of living, and though cities have grown enormously at the expense of rural districts, yet the resources of science seem increasingly to become adequate to deal with the ever increasing tension and high pressure incident to the thousand and one modes of life, which make up the complex civilization of great aggregations of humanity. That these modern transformations of society have not been without maleficent results during the process, no one can deny or question; but it is apparent, even with all the discordance and hysteria of the reconstruction period, that the constructive forces engaged in the conservation of human life today show no limit to their resources any more than was the case with the allies in their fight against tyranny and their efforts for human freedom. When the submarine campaign was decided upon by Germany the losses for some months thereafter were terrible and with reason Germany hoped to secure peace through the exhaustion of the allies through lack of food. But if the submarine was a marvellous invention it did not surpass the resources of science to discover through sound and ether waves their marvellous possibilities in the fight against what might well have proven the most destructive of all the engines of death.

If, moreover, such inventions were not only equalled but surpassed by the discoveries which enabled armies in the field to be kept in a condition of better health than an ordinary population in times of peace, then it is evident that with our knowledge of the means of prevention, precise methods with power to enforce them only are required in order to place the peoples of America and of the world today in a position of defence with regard to disease as unique as that whereby a defensive immunity has been established against some of the most destructive instruments of death.

CONTINUED INCREASE IN MEMBERSHIP.

The list of applicants for membership in the A. P. H. A. on pages 869 *et seq.*, numbering about 250 for the month, gives evidence of continued interest on the part of members in increasing the number of those related to the Association. That these lists are carefully scanned by the members the JOURNAL has good proof, for not infrequently there comes to it notice that an applicant in the "without sponsor" group was really proposed by Mr. X, or that if he is without sponsors, Messrs. X, Y, and Z stand ready to vouch for him. It is only fair to those who are members, however, to make note that applications appearing in this list are received on the regular cards for this purpose, sent out on the request of members, who not infrequently forget to put their signatures in the spaces reserved for the sponsors' names on the cards. If the sponsors will be careful to sign in these spaces they will have the credit for the members and the latter will be at the same time officially sponsored on the records.

ASSOCIATION NEWS

NEW OFFICERS OF THE A. P. H. A.

At the New Orleans meeting of the Association on Wednesday evening, October 29, 1919, the Board of Directors elected the following members to serve as officers of the American Public Health Association for the ensuing year:

President, W. S. RANKIN, M. D., Secretary and Treasurer, State Board of Health, Raleigh, N. C.;
First Vice-President, A. J. DOUGLAS, M. D., City Heath Department, Winnipeg, Man.;
Second Vice-President, S. L. JEPSON, M. D., State Commissioner of Health, Charleston, W. Va.;
Third Vice-President, W. H. ROBIN, M. D., President of the Board of Health for the Parish of Orleans and the City of New Orleans, New Orleans, La.;
Treasurer, GUILFORD H. SUMNER, M. D., State Health Commissioner, Des Moines, Iowa;
Secretary, A. W. HEDRICH, C. P. H., 169 Massachusetts avenue, Boston, Mass.
California has been selected for the 1920 place of Meeting.

PRESIDENT RANKIN.

Watson Smith Rankin, M. D., Secretary and Treasurer and executive officer of the North Carolina State Board of Health, has been elected President of the American Public Health Association for the coming year.

He is a native of North Carolina, born in Mooresville, January 18, 1879, and a product of the high schools of this town and of Statesville, N. C. He began his medical studies at the North Carolina Medical College, going thence to the University of Maryland, from which he received his degree of M. D. in 1901. He followed this work with a year of post-graduate study at the Johns Hopkins Medical School.

Dr. Rankin served six months as resident physician in the University Hospital, was resident pathologist, 1903–1905, at the Wake Forest College Medical School and dean of the school from 1903 till 1909. In the year last named he was appointed State Health Officer of North Carolina which position he has occupied ever since. Immediately on appointment, Dr. Rankin came to the North, made the acquaintance of the health executives, state and municipal, and with this knowledge of what had been done, began his memorable work in North Carolina.

Dr. Rankin has been exceedingly active outside of his immediate duties, largely in connection with public health societies. He was chairman of the A. P. H. A. Section of Vital Statistics, 1912–13; member of the Council on Health and Public Instruction, A. M. A., 1913 till now; secretary of the State and Provincial Boards of Health of North America, 1914–1917; vice-president of the National Association for the Study and Prevention of Tuberculosis, 1916–1917; chairman of the Section on Preventive Medicine, A. M. A. 1917–1918; vice-president of the National Association for the Study and Prevention of Infant Mortality, 1917–1918; president of the Conference of State and Provincial Boards of Health of North America, 1918–1919; member of the Executive Committee of the same, 1919; and chairman of the Committee on Rural Health of the National Country Life Conference, 1918–1919.

Dr. Rankin's energy and directive skill assure the continued advance of the A. P. H. A. along its chosen lines of work, which at the present moment are of greatest importance to all the peoples of the world.

LIST OF NEW MEMBERS

PROPOSED FOR ELECTION TO THE

A. P. H. A.

FROM SEPTEMBER 23, TO OCTOBER 18, 1919.

Sponsors —and— (States arranged in alphabetical order)	The New Members Whom They Introduced
GEORGE H. HAZLEHURST, Montgomery, Ala.	C. L. MURPHREE, M. D., Health Officer, Gadsden, Ala.
E. W. EDAHL, Montgomery, Ala.	MISS GRACE C. ARMSTRONG, Bacteriologist, Chicago, Ill.
MISS BERTHA M. CHALLIS, Pasadena, Cal.	WINIFRED D. MERRIHEW, R. N., Public Health Nurse, Pasadena, Cal.
GUY ROBERT JONES, Sacramento, Cal.	EDWARD GWYN SHEIBLEY, Sanitary Engineer, Riverside, Cal.
W. H. KELLOGG, M. D., Sacramento, Cal.	FRED LACKENBACH, San Francisco, Cal.
MISS OLIVE CHAPMAN, Denver, Col.	EMMA LONG, R. N., Community Nurse, Pueblo, Col.
DR. T. E. LEEKS, Hartford, Conn.	RUSSELL W. LOWE, M. D., Health Officer, Ridgefield, Conn.
A. AGRAMONTE, Havana, Cuba	EMILIO MARTINEZ, M. D., Health Officer, Havana, Cuba
OLIVE A. CHAPMAN, Denver, Col.	B. MAE STREITWALTER, R. N., Student, Urbana, Ill.
R. C. WILLIAMS, M. D., Washington, D. C.	GRANT W. SILL, M. D., Health Officer, Chicago, Ill.
SURGEON-GEN. RUPERT BLUE, Washington, D. C.	HAMILTON POLK JONES, M. D., New Orleans, La.
B. L. ARMS, M. D., Jacksonville, Fla.	CHARLES A. MOHR, M. D., Health Officer, Mobile, Ala.
F. A. BRINK, M. D., Pensacola, Fla.	MRS. S. R. MALLORY KENNEDY, Public Health Activities, Pensacola, Fla.
RUSSELL J. SMITH, M. D., Pocatello, Idaho	ELLEN REES, R. N., Public Health Nurse, Pocatello, Idaho
E. G. FREYERMUTH, M. D., South Bend, Ind.	VISITING NURSE ASSOCIATION, Att. MISS UNA B. BASTIAN, City Hall Annex, South Bend, Ind.
R. C. KIRKWOOD, M. D., South Bend, Ind.	LAURA M. SMITH, R. N., Chief Nurse, Healthwin, R. R. 5, South Bend, Ind.
JOHN DILL ROBERTSON, M. D., Chicago, Ill.	EUGENE J. O'NEILL, M. D., Chicago, Ill.
JOSEPHINE D. PFEIFER, M. D., Chicago, Ill.	MRS. MARY H. THOMAS, Chicago Heights, Ill.
M. A. WOOD, Internat'l Health Resort, Chicago, Ill.	ELMINA TEETER, D. P., Chicago, Ill.
CLYDE S. JONES, M. D., East St. Louis, Ill.	C. W. LILLIE, M. D., Health Commissioner, East St. Louis, Ill.
H. B. FITZJERREL, M. D., Geneseo, Ill.	EDITH M. HOLMSTROM, R. N., School Nurse, Geneseo, Ill.
FRED W. TANNER and RUTH S. FUNK, Urbana, Ill.	MISS LETHE E. MORRISON, Assistant in Bacteriology, Urbana, Ill.
RUTH S. FUNK, Urbana, Ill.	KATHRYN ELIZABETH HUENENK, R. N., Public Health Nurse, Kohler, Wis.
GEORGE T. PALMER, M. D., Springfield, Ill.	RUSSELL E. ADKINS, M. D., Health Officer, Springfield, Ill.
G. H. SUMNER, M. D., Des Moines, Iowa	EQUITABLE LIFE INS. CO. of Iowa (Corp. Mem.) Att. MR. H. S. NOLLEN, Des Moines, Iowa
OSCAR DOWLING, M. D., New Orleans, La.	ROBERT McGIMSEY CARRUTH, M. D., New Roads, La.
FRANK R. GOMILA, M. D., New Orleans, La.	MARY ELIZABETH BASS, M. D., Clinical Laboratory, New Orleans, La.
	CHARLES CHASSAIGNAC, M. D., Dean, Editor, New Orleans, La.
	G. F. COCKER, M. D., New Orleans, La.
	T. J. DIMITRY, M. B., Ophthalmogist, New Orleans, La.

FRANK R. GOMILA, M. D., New Orleans, La.	HOMER DUPUY, M. D., New Orleans, La.
	CHARLES W. DUVAL, M. D., Prof. Bacteriology, New Orleans, La.
EDMUND MOSS, M. D., Medical Director, Medical Building, New Orleans, La.	JOSEPH MARION HOUNTHA, M. D., New Orleans, La.
JOSEPH O'HARA, M. D., New Orleans, La.	FOSTER M. JOHNS, M. D., Laboratory Diagnosis, New Orleans, La.
PAUL T. TALBOT, M. D., New Orleans, La.	J. E. LANDRY, M. D., New Orleans, La.
	HENRY LEIDENHEIMER, M. D., Health Officer, New Orleans, La.
WILTON P. D. TILLY, M. D., New Orleans, La.	G. A. MACDIARMID, M. D., New Orleans, La.
H. W. E. WALTHER, M. D. New Orleans, La.	EVERARD M. MAHLER, M. D., New Orleans, La.
DR. W. H. ROBIN, New Orleans, La.	PHILIP WILLIAM BOHN, M. D., Ass't Medical Director Public Schools, New Orleans, La.
	HENRY DASPIT, M. D., New Orleans, La.
	W. H. KNOLLE, M. D., New Orleans, La.
	MARION SOUCHON, M. D., Medical Director, New Orleans, La.
	J. J. WYMER, M. D., Asst. Medical Director of Schools, New Orleans, La.
RAYMOND PEARLE, Baltimore, Md.	CARROLL GIDEON BULL, M. D., Baltimore, Md.
ABEL WOLMAN, Baltimore, Md.	BENJAMIN TAPPAN, M. D., Health Officer, Baltimore, Md.
W. H. MARSH, M. D., Solomons, Md.	PHILIP BRISCOE, M. D., Calvert, Md.
A. W. HEDRICH, Boston, Mass.	MISS ANNA M. REEDER, Bacteriologist, Philadelphia, Pa.
W. E. WARD, Brookline, Mass.	ELLA R. JARVIS, R. N., Tuberculosis Nurse, Brookline, Mass.
DR. M. R. DONAVAN, Lynn, Mass.	J. ALBERT REARDON, Sanitary Engineer, Lynn, Mass.
WALTER F. MARTIN, M. D., Battle Creek, Mich.	A. F. KINGSLEY, M. D., Health Officer, Battle Creek, Mich.
	ESTELLA G. NORMAN, M. D., Health Officer, Battle Creek, Mich.
L. A. CORNELIUS, Grand Rapids, Mich.	ARTHUR C. SHAVER, Inspector of Plumbing, Pasadena, Cal.
ARTHUR F. FISCHER, M. D., Hancock, Mich.	JOHN E. ERICKSON, Director Public Relief Commission, Hancock, Mich.
C. J. SULLIVAN, Chisholm, Minn.	EDWARD H. NELSON, M. D., Health Officer, Chisholm, Minn.
AMERICAN RED CROSS, Minneapolis, Minn.	MISS EVA I. ANDERSEN, Director Bureau of Nursing, Minneapolis, Minn.
R. W. HALL, M. D., Jackson, Miss.	W. H. WATSON, M. D., State Board of Health, Brandon, Miss.
MAZYCK P. RAVENEL, M. D., Columbia, Mo.	RALPH McBURNEY, Bacteriologist, Columbia, Mo.
G. A. JORDAN, M. D., St. Louis, Mo.	E. J. GOODWIN, M. D., Health Officer, St. Louis, Mo.
PROF. H. H. WAITE, Lincoln, Neb.	MARION A. JENSEN, Chief Eng. Water Dept., Lincoln, Neb.
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	A. WAYNE CLARK, Chemist, New Brunswick, N. J.
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MISS RUTH McNARY SMITH, Marshfield, Ore.

S. H. GILLILAND, M. D., Ambler, Pa.

D. H. BERGEY, Philadelphia, Pa.

M. OSTHEIMER, M. D., Philadelphia Pa.

ANNA M. REEDER, Philadelphia, Pa.

RICHARD A. BOLT, M. D., Health Officer, Oakland, Cal.

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LONSDALE J. ROPER, M. D., Health Officer, Portsmouth, Va.

RONALD A. DEAL, Health Officer, Emporia, Va.

M. D. FULLER, Sanitary Demonstrator, Chester, Va.

CLARENCE B. NEBLETT, Sanitary Inspector, South Hill, Va.

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NELLA MARINE WOODS, R. N., U. S. P. H. S. Nurse, Waukesha, Wis.

BERTHA VIRGINIA THOMSON, M. D., Health Commissioner, Oshkosh, Wis.

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J. A. LOPEZ DEL VALLE, Chief Sanitary Officer, Havana, Cuba

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ANNA ESBENSEN, R. N., Public Health Nurse, Boise, Idaho

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J. B. ROGERS, M. D., Pres. Bd. of Health, Michigan City, Ind.

EUGENE A. STURM, M. D., Health Officer, Jasper, Ind.

AMY BEERS, R. N., Supt. of Hospital, East Adams St., Fairfield, Iowa

GERSHOM H. HILL, M. D., Psychiatrist, Des Moines, Iowa

WILLIAM J. McDONALD, M. D., Medical Director of Student Health, Iowa City, Iowa

TILMAN S. CONERLY, M. D., Health Officer, Angie, La.

HAROLD C. WOODFALL, Sanitary Engineer, Baton Rouge, La.

M. V. LEVERT, M. D., Health Officer, Brusly, La.

HARRY J. BELL, M. D., Dawson, Fayette Co., La.

G. C. McKINNEY, M. D., Health Officer, Lake Charles, La.

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BOSTON ASS'N FOR THE RELIEF AND CONTROL OF TUBERCULOSIS, Boston, Mass.

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GEORGE E. DAWSON, PH. D., Clinical Psychologist, West Springfield, Mass.

N. R. SMITH, Bacteriologist, Ann Arbor, Mich.

IRENE BOWERS, R. N., Superintendent Hospital, Jackson, Mich.

MISS RENA S. ECKMAN, Business Manager, Jackson, Mich.

HARRY H. FREEMAN, City Manager, Kalamazoo, Mich.

MABEL SIMIS ULRICH, M. D., Minneapolis, Minn.

C. J. SULLIVAN, Health Officer, Chisholm, Minn.

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ELI POWELL, M. D., Health Officer, Derma, Miss.

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COMMITTEE REPORTS.

INFLUENZA EPIDEMIC.

The Subcommittee on Pathometry, Committee on Statistical Study of the Influenza Epidemic, met at Columbia University, September 19, 1919, Professor Charles C. Grove in the chair. The chairman in noting that data suitable for study would soon be available, stated that there were a number of basic questions to dispose of before attempting elaborate mathematical studies. The questions are set forth below, together with the concensus of opinion.

I. Can any mathematical function rationally express the epidemic process (a) chronologically, (b) as to age incidence, (c) in relation to epidemic and endemic occurrences of diseases known as "influenza" and "pneumonia" in past years, for a particular community?

The first conclusion of the Subcommittee was that no mathematical function, simple in nature and, therefore, practicable, could probably be found at present to express analytically the "law" of this epidemic. The use of the Pearsonian Type IV equation, and the equations of other frequency curves in the Pearsonian system, seemed to the Subcommittee to be undesirable so far as stating the quantitative characteristics of this epidemic are concerned. The law of an epidemic may be represented, the Subcommittee believed, only by an analytic expression which took into account the extremely complicated cross-play of factors involved, and not by an equation representing the random distribution of the sizes of things. The Subcommittee seemed to doubt very much whether any analytic expression could be found to express the "law" of any epidemic. Some light may be shed upon the higher analytics of this epidemic if epidemiologists and pathologic and sanitary bacteriologists will stipulate which of the many factors in the epidemic process are supremely important. By confining attention to a very few factors, an analytic expression for the "law" of an epidemic may be found, but as to this, the Subcommittee has nothing definite to offer.

II. Shall the pandemic explosion of 1918 be studied in relation to the course of acute respiratory disease since the preceding worldwide extension of the disease known as "influenza?"

The Subcommittee had before it the proposal that perhaps the undulations, seasonal and otherwise, of the curve for acute respiratory disease since

the pandemic of 1889–1891, could be represented by a harmonic analytic function; that the experience of the autumn and winter of 1918 and the early part of 1919, was but the latest of a long series of waves, the c ose of a cycle of respiratory disease mortality. Although the representation of thirty years of respiratory disease mortality by means of a Fourier series seemed possible, the Subcommittee thought that such representation alone, without sound support for the proposal from clinicians and epidemiologists, would be a misapplication of the statistical method. The Subcommittee urged that the crude facts for the present pandemic period be studied intensively in relation to the mortality from acute respiratory disease during the thirty-year interval separating the two pandemics. Such study might provide the basis for an analytic expression representing a cycle of respiratory disease mortality. The conception that the invasion of 1918–1919 was not an isolated, explosive phenomenon, but was part of a chain of events leading back thirty years or more was held to be worthy of further discussion. The epidemiologists are asked to say whether they believe further analysis of the 1918 pandemic data from this angle seems justified. A full display of the earlier statistics so far as possible by month, and by sex and age seemed to be desirable. The Subcommittee wishes to be advised by clinicians as to whether the 1918 pandemic was a distinctively different disease from that known as "influenza" in past years, or not.

III. On "norms" of influenza-pneumonia mortality and morbidity.

In the lack of any definite information that the symptom-complex known as influenza, and the associated pneumonias, indentified in the 1918 pandemic are the same diseases as those known by the same names in past years, the Subcommittee felt that it could offer no suggestion as to a "norm" of mortality or morbidity which would have a sound philosophic basis. In order to arrive at an approximate idea of the number of "excess" deaths due to the morbific influence of the new (?) disease, some attempt should be made to estimate the "expected" number of endemic so-called influenza-pneumonia deaths. An absolutely satisfactory solution of this problem was deemed to be impossible because of the clinical, nosologic and other difficulties involved. The Subcommittee approved tentatively the idea that an "endemic" figure be computed from the mean annual death rate for influenza-pneumonia of as many years preceding the pandemic as practicable and properly classed according to the month and week in the calendar year, by race, sex, age and other particulars where the data are accessible. The material used as a "norm" will depend upon the amount of detail available in historical statistical records.

IV. On the disease data to be investigated.

The Subcommittee considered the kinds of data to be investigated analytically. It believed that the case-fatality of the disease had varied enormously from one community to another, and that it would be necessary to have accurate morbidity statistics of influenza and of its complications before the mortality problem of the disease could be understood.

V. On a study of causal relationships in influenza.

The Subcommittee wishes to caution all research students in the use of statistical devices ordinarily employed to assist in arriving at conclusions of causal relation between one phenomenon and another. It was agreed that the theory of correlation is at the present time in an unfinished condition and that any results of correlation studies be considered only as suggestions for intensive work on the part of clinicians and pathologic and sanitary bacteriologists. The correlation method in the statistics of influenza would, it seemed to the Subcommittee, be economical of research effort, because it can direct attention to the matters which it is most vital to investigate.

Because of the multitude of factors involved in the pandemic (not all of which are of the same weight, however), the method of multiple correlation was recommended as the one most likely to prove useful. A discussion of what factors the statistical analyst ought to be prepared to deal with followed. It was shown that in any phenomenon of infectious disease there were three basic elements: (1) the invading organism or group of organisms, (2) the host, or population receiving the attack, and (3) the external environment of both invader and host. The principal facts which the analyst must bear in mind with respect to the invader are as follows:

(a) the size of the dose of infection
(b) the frequency with which the dose or doses are brought in contact with the host
(c) tendency of the invader to specific localization
(d) infectivity of the organism or organisms (power to produce sickness)
(e) virulence (power to produce death)
(f) activity of invader in the presence of existing bacterial flora

The characteristics of the host to be considered are related below:

(a) Opportunity for receiving dose of infective material: Density of population; transport systems; public assembly; other channels of communication between the infected and the uninfected.

(b) Natural and acquired immunity to invasion and multiplication of organism or organisms, and to poisons produced by the invader.

(c) Resistance factors: Nutrition, general physical condition, fatigue status, hygiene of environment, existence of definite bodily and mental states (injuries, effects of other diseases, and intoxications, etc.), personal habits, medical and nursing care of those infected.

The third factor is the external environment of both the invader and the host. Temperature and humidity, separately and when acting together, and changes in the same, may be expected to have some influence upon infectious disease and especially upon respiratory and influenzal disease. By the ordinary methods of graphically associating weather and influenza-pneumonia data no very clear idea can be formed of the relation between these two elements. Students of this phase of the causal relation problem are urged to employ proper methods of measuring the combined effects of temperature and humidity, and of variations in the same. It is possible also that only accumulations of excess or deficiency of temperature and humidity from an "optimum" or "norm" will show correlation with influenza. Some of the points to bear in mind in these correlation studies of weather and influenza data are, it seems to the Subcommittee:

(a) Explosiveness of "epidemicity" of the epidemic

(b) Time distribution

(c) Aggregate of epidemic damage regardless of explosiveness or time distribution

(d) Infectivity of the organism at various stages of the epidemic wave

(e) Virulence of the organism at various stages of the epidemic wave

As to the effect of weather conditions upon the case-fatality of the disease, the Committee recommended that, wherever possible, mention be made upon case records of current weather conditions, and that such case-records be studied in relation to the various weather elements and variations in the same.

VI. On the nature of research studies in influenza statistics.

The Subcommittee wished to urge through its resolution that the inductive studies discussed in these notes be supplemented by deductive inquiries. Rigorous analysis, applied to reasonable hypotheses of the epidemic process, and referred from time to time to empirical facts may lead to results of value.

For the use of analysts, the following bibliography is given:

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EDWIN H KOPF, *Secretary*,
Committee on Statistical Study
of the Influenza Epidemic.

REPORT OF THE COMMITTEE ON SEWERAGE AND SEWAGE DISPOSAL, SANITARY ENGINEERING SECTION.

Presented at the meeting of the American Public Health Association at New Orleans, La., October 27-30, 1919.

IT is well known to those who have spent much time in our rural districts that the vast majority of families retain in use the antiquated privy with its menace of typhoid by the contamination of wells and springs, and through the agency of flies; the possible transfer of the hookworm, tapeworm and other parasites by contact through the soil and vegetable life, and with its attendant obnoxious odors.

It is true that among the better class of farmers these conditions are being ameliorated and in many cases really modern and sanitary methods have superseded the objectionable privy; but rural communities as a whole are conservative and progress in such matters is slow.

For instance, it was found upon an inspection by the United States Health Service in 72 towns of populations varying from 500 to 20,000 located in 15 representative counties of 13 different states, but one was "free from grossly insanitary privies." In Connecticut "of the 15 to 20 analyses of wells received in this office (of the State Department of Health) each week, practically 95 per cent show evidence of contamination." In Indiana 60 per cent of the shallow wells have been found impure, and in Wisconsin, which is certainly not a retrograde state in regard to sanitary matters, it has been found that from 30 to 40 per cent of the water supplies on farms contain B. coli, indicating contamination by barnyard drainage.

For this reason the committee has taken *Rural Sanitation as applied to the Collection and Disposal of Nightsoil, Sewage and Garbage* as a fit and timely subject for report. A further reason for its selection lies in the fact that, while there is much valuable literature on the subject, particularly in the bulletins of boards of health, the information remains scattered, unrelated and unstandardized.

It is hoped that by presenting a few typical and inexpensive methods to be followed and devices to be recommended for the disposal of rural wastes from a limited number of individuals and under ordinary conditions, this report may serve a useful purpose as a guide to the householder, physician and local health officer.

The object to be obtained and the methods to be employed may be categorically outlined as follows:

Object.

To collect and dispose of nightsoil, sewage and garbage in rural communities:

(a) Without danger to health by
- Contamination of the soil;
- Contamination of vegetables;
- Contamination of water or ice supplies;
- Direct contact;
- Indirect contact (flies, mosquitoes, vermin).

(b) Without the dissemination of offensive or disagreeable odors.

(c) Without offense to sight by
- Lack of privacy;
- Exposure of dejecta;
- Day removal of nightsoil near habitations.

(d) Without breeding or attracting undesirable insects or vermin.

(e) With the maximum of convenience and comfort.

(f) Without unnecessary expense—
- First cost may often be reduced by obtaining expert advice.
- Operating costs may be kept down by providing efficient supervision (effect of frost, repairs, utilization as fertilizer).

Methods.

1. Disposal of nightsoil or dry disposal
   - (a) The straddle trench
   - (b) The pit privy
     - Movable or temporary
     - Fixed or permanent
   - (c) The receptacle (pail, tub or box) privy
   - (d) The chemical closet
2. Disposal of sewage or wet disposal
   - (a) The cesspool. No outlet provided
     - Pervious
     - Impervious
   - (b) The tank. Outlet provided
     - Plain settling
     - Septic
     - Imhoff

     Followed by
     - Dilution
     - Surface irrigation
     - Subsurface irrigation
     - Sand filtration
     - Trickling filters
     - Contact beds

     and sometimes also by disinfection
   - (c) The soakage or absorption pit for
     - Urine
     - Slops

3. Disposal of garbage
   (a) By filling in land
   (b) By burial
   (c) By use as fertilizer on the land
   (d) By burning
   (e) By reduction for recovery of grease and tankage
   (f) By feeding to hogs
4. Disposal of manure
   (a) By burning
   (b) As fertilizer

With prevention of flies during storage

With protection from flies or direct contact with excrement provided, there are few methods of disposal in general use that may not be employed under special conditions as to remoteness from habitations, water supplies or cultivated land. Much depends on the climate, the character of the soil and the reliability of maintenance obtainable. General principles remain the same for all, but the application may differ widely between an isolated construction camp, a farm, a military cantonment and the outskirts of a village, and the cost demanded in the last instance would in no wise be justified in the first.

It has not been possible within the scope of the report to go into detail regarding special provisions for camps, schools, fair grounds or communities involving more than a few individuals but the general principles remain the same as for the individual house.

Dry Disposal.

Disposal on the surface of the soil is inadmissible from every point of view, inviting transmission of disease germs by accidental contact, through flies, mosquitoes, rats or domestic animals, farm produce and water supplies. There is also the danger of transmitting hookworms where these are indigenous, besides being an offense to sight, smell and the sense of decency.

The Straddle Trench is the most primitive form of sanitary provision, and is adapted only to such situations as are found in lumber camps, with mobile troops, etc., remote from habitations. The trench is about twelve inches in both depth and width and of the necessary length. The earth removed is banked on each side, serving as a rest for the feet. After use the excreta should be at once covered with earth several inches in depth.

A more desirable device, but suitable only for secluded locations consists of a cheap and simple *Box Seat* which may be placed over a pit without any superstructure and moved as occasion requires. The box should be fly-tight and the lid self-closing, in which case the strictly sanitary requirements may be met provided care is exercised in selecting the location.

The Pit Privy is the simplest arrangement that meets the requirements of sanitation and privacy. If improperly built or located it is a serious menace to health, especially on account of the transmission of pathogenic bacteria by flies, animals and water used for household purposes. If permitted to overflow during storms and contaminate the surface of the ground, the danger is greatly increased. These objections may be overcome by providing:

A pit of proper depth and capacity.

A tight superstructure so designed as to prevent the passage of flies to or from the pit.

A floor above the ground level.

A door and lids to the seats that close when not in use.

Durable screens over all openings for ventilation.

If the pit privy is for use in farms, camps, hunting lodges, etc., far from other dwellings and sources of water supply, the pit may be left pervious, and, when necessary, the superstructure moved to a new location, a pit for which has been prepared in advance.

The pervious pit should never be used in villages or where the contamination of wells or other water supplies is possible. In that case the pit or vault should be given an impervious lining. The structure then becomes more fixed and permanent in character. By constructing the vault in two compartments they may be used alternately for several months. While resting in a ventilated chamber the contents diminish in volume and become easier and less offensive to handle, especially if a little dry earth or, better, lime has been added each time the privy is used.

In general, other wastes than excreta should be excluded from the pits or vaults or privies. If the vault contains much dilute liquid, cleaning is expensive and in warm weather mosquitoes may breed. This may be prevented by adding a cupful of petroleum to the contents every week or two.

By providing a removable box seat the pits of latrines or privies may be burned out at least three times a week, using a gallon of crude oil to fifteen pounds of hay or straw. Otherwise it may be sprayed with a mixture of one pound of lampblack to two gallons of kerosene or one pound of bone-black to three gallons of crude oil.

Screens should be durable, of from 14 to 18 meshes per inch. If painted light blue they repel flies and are difficult to see through from the outside.

The Receptacle Privy, in which a can, pail, box or tray is substituted for a pit or vault, has an advantage in the possibility of placing it indoors if an outhouse is not available, and in the prompt removal of wastes and constant supervision which are then essential. On the other hand, for this very reason,

it is less fool-proof than the well-built pit privy and so should be used only when someone can be responsible for its regular care.

The receptacle has a capacity preferably of about two cubic feet. It should be removed at least once a week in warm weather, or when about two-thirds full, and be replaced by a clean receptacle with an inch or so of sawdust or dry earth in the bottom. It may be handled from inside or from the rear of the privy house, and, in order to prevent the access of flies, it should fit tight directly under the seat, to which position it should be directed by guide strips nailed to the floor.

The use of any but thin paper should be avoided and after use the contents should be sprinkled with lime, ashes or dry earth kept in a box or pail convenient for the purpose. The precautions for ventilation, screening, etc., and, if out of doors, the construction of the superstructure are the same as for the pit privy.

To avoid odor the receptacle should be washed when emptied with a 10 per cent solution of cresol and the outside, if of metal, scoured with sand and paraffin.

In military camps or where used by careless persons the seats should be scrubbed daily with soap and water and at least twice a week with a solution of one and one-half ounces of cresol in a gallon of water.

The necessity of providing for the accession of farm hands during the harvesting, berry-picking and canning season is important on account of its bearing on the possible contamination of food supplies. For such situations a receptacle consisting of a long trough which can be inserted under several seats and withdrawn for cleaning may be substituted for the ordinary can.

If the contents of the cans become frozen so as to render emptying difficult, they may be immersed in warm water a few minutes, when they are readily emptied. Otherwise a surplus number of cans should be provided so that when filled they may be stored until thawed out.

The out-door privy should be inconspicuous. A trellis or a few shrubs before the door will secure this end and improve the general appearance of the place as well.

The Chemical Closet is a receptacle privy in which the contents of the receptacle are largely liquefied and sterilized by a strong caustic solution, such as a solution of sodium or potassium hydroxide.

If properly designed and cared for and with proper chemicals it may be placed in any convenient place in the house or elsewhere and therefore, need never be exposed, inaccessible or uncomfortable. Danger of soil pollution or other means of disseminating disease is greatly reduced and it is easily ventilated and cleaned. On the other hand, it requires the attention demanded of any receptacle privy and, in addition, the proper selection and use of the chemical. Where such attention is assured, the chemical closet is well adapted to the use of invalids, schools, institutions and resorts that have no facilities for sewerage.

The final disposal of nightsoil is quite as important as its collection. It should not be accessible to insects, vermin, barnyard fowl or stock, or be liable to come in contact with the human person during or after removal. It should, therefore, never be placed on the surface of the ground.

Where receptacles are used by villages or cantonments removal should be done under some central authority and during transit the nightsoil should be kept under cover.

If a sewerage system is within reach the best plan is to dump the nightsoil into one of the sewers. Otherwise, burial in the ground is usually the simplest and best method. This is sometimes done by plowing a furrow, distributing the material in it and plowing under, but as there is too great a likelihood of imperfect covering in this way it is recommended that this be done by hand.

A preferable method is to dig a trench from 9 to 18 inches deep (24 inches in winter), place the nightsoil in this to a depth of from 2 to 4 inches and backfill at once with at least 4 inches of earth. The bacteria indigenous to the soil at this depth will effectually dispose of the material without offense. This method should be carried out in some well drained sunny field which will not be put under cultivation within six months (twelve months in regions where the hookworm prevails). Such a field should not drain toward a well, spring or other source of water supply. It should be at least 300 feet therefrom or from any dwelling. No hogs, cattle or poultry should have access to land devoted to this purpose. In this way 3,600 cubic feet of nightsoil may ordinarily be disposed of per acre of ground.

Another method of disposal for nightsoil is by incineration with rubbish: or it may be utilized as a fertilizer, preferably first allowing it to rot for a year. These methods cannot be recommended, however, on account of the danger of odor and flies.

To deodorize privies, milk of lime should be added to their contents once a week, but for the *disinfection of nightsoil* a solution of one pound of chloride of lime in five to eight gallons of water, or a 3 to 5 per cent solution of cresol, will be found more effective, using from three-fourths to one gallon per cubic foot of nightsoil.

To prevent the breeding of flies the nightsoil should

be sprinkled with powdered borax or, better, a solution of one pound of borax to a gallon of water for every 10 cublic feet of nightsoil, applied once very 10 days.

No privy should be located within 20 feet of a house; within 50 feet of sleeping or eating quarters in a camp or cantonment; within 50 feet of a stream; or, if leaching into the soil is possible, within 200 feet of any body of water that may be used for household purposes, or upon land draining directly toward a well, spring or stream thus used.

Wet Disposal.

The Cesspool is, in effect, a deep pit privy with a pervious lining. If impervious it is practically a crude form of septic tank and there appears no good reason why a well-designed tank should not be preferred in every case.

Cesspools are usually from 7 to 12 or more feet in depth and the minimum capacity may be placed at about 80 cubic feet. They permit gross pollution of the subsoil and so should be only used in remote regions and where the water supply is brought from a higher level and from a considerable distance, depending on the formation. They should not be used where the ground water stands within 10 feet of the surface, or where, as in limestone regions, natural underground channels may exist.

As with the pit privy, surface water should be rigidly excluded, the structure made entirely flyproof, and the same methods should be applied for disinfection.

The cesspool should be cleaned when filled to within not less than 2 feet of the top. This may be accomplished pneumatically by employing a portable "odorless excavator" which conveys the material to the nearest sewer or to a field for irrigation, but to avoid handling large volumes of liquid that fail to leach into the ground this may be permitted to overflow to a line of subsoil distribution tile or to a specially prepared bed of gravel or cinders, from which it will gradually soak into the surrounding soil.

If used as a fertilizer by irrigating the land this should only be done in dry sunny weather, on pervious land located at a distance of at least a quarter of a mile from any dwelling and on which only trees, shrubs, grain or root crops are cultivated, and where these are not to be harvested within a month.

The Septic tank is the type of tank generally to be recommended for isolated houses having a public water supply and a soil favorable for subsoil irrigation for the effluent. Otherwise resort must be had to some form of dry disposal.

For single houses the capacity, including space for sludge, should equal the volume of sewage to be received in about 36 hours, or say 10 cubic feet for each person.

No surface or roof water should be admitted.

To maintain a favorable temperature in the winter the surface of the sewage in the tank should, if possible, be below the frost line.

The tank may consist of two chambers or of a single chamber with baffles, and for small installations it should be covered. Hopper bottoms with sludge outlet pipes facilitate the collection and removal of sludge but usually add to the cost.

Inlet and outlet pipes should terminate from 12 to 24 inches below the surface of the sewage.

Gas vents should be provided.

Only thin toilet paper should be used.

No disinfectant should be employed, but a thin film of oil may be kept on the surface to prevent odor and the breeding of mosquitoes.

The tank should be cleaned annually.

To promote bacterial activity a few pints of sludge from a neighboring tank or a little stable manure should be placed in the tank when first used.

The Imhoff tank is to be preferred to the septic tank for larger installations, such as institutions, hotels, etc., as there is less liability to offense in the disposal of the sludge. The period of retention should be from 5 to 20 hours, depending on the number of persons served. In other respects the rules given for septic tanks only apply.

The effluent from either type of tank may pass to a body of water that is not used for drinking purposes if conditions for dilution are otherwise favorable, but in most cases it should be first oxidized in some other way.

If it is desired to effect a greater degree of purification than the mere removal of suspended solids, the tank effluent should be subjected to one of the following "oxidizing" processes.

Trickling filters and contact beds are adapted in particular to large installations where the services of an expert are required both in the design and operation.

A special design suitable for use by from 6 to 120 individuals has been recently prepared by the United States Public Health Service, consisting of a grease trap, Imhoff tank, screen, tipping distributer, a lath filter from 3½ to 6 feet deep having a volume of 8 cubic feet per capita and a secondary Imhoff tank. The whole device is made of wood and for 10 persons is only 13 feet by 5 feet 10 inches by 11 feet 0 inches high. "The degree of purification effected is sufficient for all purposes except where the discharge is directly into a water supply. In such a case chemical disinfection of the effluent is recommended in addition. . . . The plant will operate without a nuisance, and, with a monthly

inspection and semiannual or annual removal of sludge from the tanks, will operate continuously without further attention." (Reprint No. 504, Public Health Reports, 1919.) Such a plant should be protected from the weather, particularly in cold climates, and its life would be much shorter than if built of masonry.

Another compact device consists of a tank followed by a fine copper screen or sand filter and then a filter of gravel or pebbles through which air is permitted to rise.

Surface irrigation, unless under expert supervision, is not recommended, as offering too many opportunities for the production of odors and mosquitoes and for infection through flies.

Subsurface irrigation by lines of open joint tile laid from 8 to 15 inches below the surface may be the best method to employ provided the soil is not water-soaked or too impervious. The former difficulty is sometimes overcome by embedding the tile in a light fill of sandy soil. The irrigated area should be at least 150 feet from any habitation.

To prevent clogging the soil the sewage should pass through a grease trap at the house and to promote aëration in the soil it should be delivered intermittently from 3 to 6 times a day (somewhat less if the soil is dense) by a siphon contained in a dosing chamber after leaving the tank. This device may usually be omitted, however, where the house is only occupied during the summer.

The tile should generally be 3 or 4 inches in diameter, laid with a piece of tar paper over the joint and with a gradient of from 2 to 6 inches per 100 feet. The length depends upon the volume of sewage and the character of the soil, varying from 50 to 100 feet for an ordinary family. Where more than 100 feet is required in all it is generally desirable to lay two or more lines of tile. The arrangement may vary with the topography but parallel lines should be more than 6, and preferably 10 feet apart. Unless the soil is quite open the irrigated area may best be operated in two units, dosed alternately. If the land is cropped this should be limited to grains, fodder crops and fruit trees.

Owing to the difficulty of securing uniform distribution of the sewage by reason of the variations in the permeability of the subsoil or improper gradients or joints in the lines of tile, and, further, owing to the difficulty in securing any effective drainage when the soil is saturated by storms, there is a measure of uncertainty in obtaining uniformly satisfactory results with this method of disposal; so that, *unless the conditions are favorable and other satisfactory methods are not feasible, subsurface irrigation is not recommended.*

Sand filtration may be used for tank effluents where more than 25 persons are served and where the land is suitable. For this number of persons an area of about 1,500 square feet of bed is required. The filters require careful design and maintenance. Cropping is usually undesirable. Dosing should be intermittent and applied in rotation to a depth of from 3 to 6 inches to two or more beds. In winter the beds should be furrowed to prevent freezing.

Sludge disposal. Sludge from tanks should be dried on porous soil or on specially prepared beds. It should be placed in layers of from 4 to 10 inches in thickness—the thinner the better—until sufficiently dry to be spaded, when it can be buried, plowed under or used as fertilizer. Well digested Imhoff sludge may be used to fill in land. Sludge from secondary tanks,* being difficult to dewater, should be placed on specially prepared beds to a depth of from 2 to 4 inches.

Otherwise, sludge may be drawn off into furrows and covered over.

Fly breeding may be prevented by applying a solution of borax as in the case of nightsoil.

To prevent odor, sludge may be covered with a thin layer of carbonate of lime or "land plaster."

The soakage pit is useful for the disposal of kitchen slops and urine where the water-carriage system is not available.

Slops may be spread over the surface of the ground in out-of-the-way locations provided the soil is porous and no standing water remains. Otherwise, a pit about three feet deep filled with broken stone, gravel, sand or clinkers may be prepared to which the slop water is discharged after the removal of the coarse solids by a strainer and the grease by a trap. The bed may be covered with a foot or so of earth to bring the top to the ground level and prevent access to insects.

For large volumes a tank and dosing siphon may be employed with advantage, and a system of subsoil tile substituted for the soakage pit.

Where many persons are to be provided for, as in schools, hotels and in the latrines of army camps, urinals should be installed, but for private dwellings a hinged seat that can be lifted is a simpler and suitable arrangement.

Urinals should be flushed with at least a gallon of water daily, and it is desirable that they be automatically fed with cresol or some other deodorant. The liquid can then be led to a soakage pit similar to that provided for slops.

Another plan suitable for camps is to build one or more vertical funnels into the stone filling of the pit to serve as urinals.

Such a pit may be about 3 feet to 6 feet square

* Those taking the effluent from filters.

with 24 inches depth of broken stone or other pervious material on the bottom, depending on the material and the number of persons served. Large installations should consist of several such units.

If preferred, a larger unit, 4 feet by 12 feet by 4 feet deep, adequate for 100 men, may be substituted for the one described.

For emergency use a cone of 6-mesh wire 18 inches in diameter at the upper end, 24 inches long and filled with sawdust will serve without a pit for 6 or 7 men.

Disposal of Garbage.

Garbage should be collected without admixture of ashes or other material in metal cans having tight covers, with one always available while the others are being emptied. The cans should be scalded with hot water after emptying.

Garbage is sometimes used to fill in waste land, but for obvious reasons this is not to be approved.

Garbage from households may be satisfactorily disposed of by burial following the rules laid down for nightsoil. Sometimes it is plowed under as a fertilizer, but although it has some value in this respect, the probability of odors ordinarily excludes this as a sanitary procedure. Where odors from garbage do occur the latter should be sprinkled with quicklime.

If without too large a proportion of moist vegetable matter a moderate amount can be safely consumed in the kitchen range, although at the risk of odor; while if the quantity is sufficient, as in a construction camp or a military cantonment, a small but well designed incinerator will eliminate much of this objection.

Burial in summer and incineration in winter, when the ground is frozen and the garbage is less moist, will often be found advisable.

For camps the "Woodruff Pit" has been found a satisfactory device. This consists of an excavation in the ground from 10 to 13 feet in diameter and 4 feet deep, lined with fieldstone. A conical pile of stone or a cone of brick with open joints is built in the center around a chimney of two or more lengths of sewer or stovepipe. Garbage and nightsoil placed on a fire built in the pit will usually be readily consumed; but if, on account of wet weather or very moist garbage, a more rapid combustion is desired, this may be had by pouring on a little kerosene oil. Care should be taken to prevent dissemination of papers, etc., by the wind.

Another arrangement consists of a pit 5 by 2½ feet in plan with the bottom sloping from a depth of 6 inches at one end to 12 inches at the other. The trench is filled with fieldstone or, if these are not available, with tin cans, the excavated material is banked up on the sides and a fire built on top. After the stones are thoroughly heated any liquid wastes are poured in the trench at the shallow end of the pit, in which they are evaporated, and the solid material placed on top where it first dries out and then burns up.

A certain amount of odor will probably be inevitable with incineration, but with competent operation this need not be serious in the case of camps.

As garbage contains a considerable amount of grease which can be recovered by percolation with some solvent, leaving a tankage with some value as a fertilizer base, this may prove a wise method of disposal where collection can be made from a considerable population; but as the plant required is rather elaborate, this process can seldom be availed of except for large cities. The demand for grease and fertilizer has increased so during the war, however, their recovery should be considered in connection with army camps and cantonments.

Probably the most economical method for the farmer and for towns of moderate size is in feeding to hogs, due care being taken to maintain cleanly conditions about the pens. The garbage should not be kept more than 48 hours in any case before feeding. On account of the possible nuisance from smells and flies the pens should be located, if possible, at least a quarter of a mile from dwellings.

Disposal of Manure.

The manure pile is a most prolific source of flies, which find in it a favorable environment for breeding. As it takes about two weeks for the larvæ to develop, these should always be destroyed if the manure is to be kept for a longer period except in cold weather.

Fifty horses will produce a cartload of manure a day. Fly breeding may be prevented by an application of borax, using not over one pound to 16 cubic feet of manure if the latter is to be used as a fertilizer, but a better plan is to sprinkle with a solution of two pounds of copperas per gallon of water, or with a solution of hellebore mixed in the proportion of one pound to 20 gallons of water and applied at the rate of a gallon of the solution to each cubic foot of manure. By consolidating the exposed surface of the manure by battening with a spade it will prevent to a considerable extent the breeding of flies. The heat generated just below the surface by decomposition is then such that the larvæ are largely destroyed.

The most natural use for manure is as a fertilizer, but where this is impracticable it may be piled in windrows about two feet high, saturated with oil and burned.

Of the safeguards against disease in our rural communities those relating to the protection of

water supplies and to the transfer of disease germs by flies are by far the most important; so that, whatever method of disposal is adapted to a given situation it should be such that *no excretal matter can find its way, either by percolation through the soil or by surface wash during storms, to wells or streams used for drinking purposes, and that all such excretal matter shall be so protected by screening or otherwise that flies cannot find access thereto.*

In this connection it may be well to point out that when the polluting material lies at a higher elevation than the water surface in a neighboring well there is always the tendency of contamination of the well; but where the source of pollution lies permanently at a lower elevation contamination of the well will not occur.

During the preparation of this report the committee has addressed inquiries regarding the subject treated to the health authority of each state as well as to others and has received in return a large number of bulletins, reports and prints containing information of great value that has been freely drawn upon and for which the committee desires to express its hearty appreciation and thanks.

Respectfully submitted,

KENNETH ALLEN, *Chairman.*
FRANK A. BARBOUR,
GEORGE S. WEBSTER,
T. CHALKLEY HATTON,
LANGDON PEARSE,

Committee on Sewerage and Sewage Disposal, Sanitary Section American Public Health Association.

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HEALTH EMPLOYMENT BUREAU.

In order to help relieve the shortage of sanitarians, free help-wanted announcements will be carried in this column until further notice. Copy goes to the printer on the fifteenth of each month. In answering keyed advertisements, please mail replies separately.

The Health Employment Bureau also sends lists of applicants to prospective employers without charge.

Man for position of dairy and food inspector and director of city laboratory. Must be capable of doing water and milk analyses and bacteriological work. Salary $2,000 to $2,500. For details apply to Dr. R. L. Carlton, City Health Department, Winston-Salem, N. C.

Nurse who has had experience in tuberculosis work, for this division of the city health department activities. Salary $100 per month with transportation. Apply with references and full information to Dr. R. L. Carlton, City Health Department, Winston-Salem, N. C.

Visiting nurse to work with staff, secretary, two graduate nurses, social visitor, dentist, assistant in dental department, and office assistant. Associated Charities of Wheeling, 300-303 Board of Trade Building, Wheeling, W. Va.

Experienced bacteriologist as assistant in main office of Public Health Laboratory, University of North Dakota. $100 per month. Must have good working knowledge of blood counts, urinalysis, gastric contents. Address L. G. A. 297—care of the JOURNAL.

Instructor in geology for year 1919–20. Salary $1,500. Dean P. P. Boyd, College of Arts and Science, University of Kentucky, Lexington, Ky.

BOOKS AND REPORTS REVIEWED

Mortality Statistics of Insured Wage Earners and Their Families. *Experience of the Metropolitan Life Insurance Company Industrial Department, 1911 to 1916, in the United States and Canada. Louis I. Dublin, Ph. D., Statistician, with the collaboration of Edwin W. Kopf and George H. Van Buren. Pp. 397. New York: Metropolitan Life Insurance Company. 1919.*

Public health officers will be greatly interested in this volume of statistics published by the Metropolitan Life Insurance Company. It represents a statistical study of 635,449 deaths which occurred among the policy holders of this company during the years 1911 to 1916. The figures also represent about fifty-four million years of life. The magnitude of this investigation increases the reliability of the results. Seven-eighths of the policy holders were white and one-eighth colored. The figures include both sexes, the percentages for females being somewhat greater than for males. They also cover a wide age distribution. The deaths are sorted out in accordance with color, sex, and age, but not according to occupation. Reference is given, however, to Bulletin No. 207 of the U. S. Bureau of Labor Statistics which contains a full account of the mortality experience of the Industrial Department of the company. The two taken together give an admirable presentation of the valuable information which has been accumulated during the six years referred to.

The present report takes up, first, the mortality from all causes of death combined, an entire chapter being devoted to this subject, specific rates being given for white and colored persons, males and females, and for different age groups. Then follows a general classification of mortality from the principal causes of death, following the international list. Subsequent chapters treat specifically of tuberculosis, organic diseases of the heart, pneumonia, Bright's disease, external causes of death, such as accident, suicide and homicide, cancer, cerebral hemorrhage and apoplexy, four of the communicable diseases of childhood, namely, measles, scarlet fever, whooping-cough, diphtheria, and croup, diarrhœa and enteritis, diseases and conditions incidental to the maternal state, diseases of the arteries, appendicitis, pellagra, malaria, etc. In fact, the report covers practically all the common causes of death. These studies of particular diseases cover about 250 pages.

There are several appendices which give specific rates and so-called standardized rates.

Throughout the book frequent comparisons are made between the statistics of the Metropolitan Life Insurance Company and the statistics of the U. S. Registration Area of the U. S. census, and health officers will be especially interested in these comparisons.

The statistics in this report have been prepared with great care by the Statistical Department of the Metropolitan Life Insurance Company, and the thanks of the profession are due to Dr. Louis I. Dublin and his associates, Edwin W. Kopf and George H. Van Buren, for the preparation of a volume which will do much to arouse the interest of health officers in the statistical side of their work.

GEORGE C. WHIPPLE.

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Incidence of Smallpox Throughout the World in Recent Years. *R. Bruce Low, M. D., London: Reports to the Local Government Board (Great Britain) on Public Health and Medical Subjects. New Series, No. 117. 1918. Pp 104.*

Vaccination regulations having become lax, Doctor Low fears that history will repeat itself and that war will be followed by an outbreak of smallpox. He reviews the history of the epidemic of 1870–75, and estimates that over 500,000 smallpox deaths occurred at that time.

Before 1914, Russia reported smallpox cases. Russian prisoners spread the disease to German civilians. Deported populations have been living in Germany under unwholesome conditions. These returning will also spread the disease. Smallpox has recently appeared in Austria, Turkey, Spain, and the East. With the cessation of war, shipping will carry the disease from one country to another. The author urges immediate vaccination.

Sources of statistics are government publications, articles in medical journals, province, state and city health reports. The author says, "It is to be regarded as a summary of the information on the subject obtainable from the records in the Board's Medical Department." The extent of the data is as complete as each division's accounts permit, beginning with 1870.

In Europe, Russia and Spain are constant sources of infection. In Austria, smallpox has been continually prevalent, particularly in the provinces near Russia; in 1915, in Galicia and Bukowina there

were 20,116 cases. Germany is open to infection from Russia and Austria; during 1917 there were about 4,000 cases. Sweden's record is excellent; infection from Russia is responsible for the few cases,—18 deaths from 1895–1916, a period of 22 years; vaccination has been compulsory for years. Norway's and Denmark's records are also good. Holland's last outbreak was in 1893–94; in January to June, 1916, there were 79 cases and 8 deaths in Rotterdam. In Belgium vaccination is not compulsory. In 1913 there were 120 cases, and since then while there are no figures, smallpox deaths have been reported. France shows epidemics in 1870–75, and 1900–01. In 1910 there was an outbreak in Paris; in March, 1918, in Rouen. Great Britain shows no severe epidemic since 1870–75. Spain and Portugal show continuous high rates; in 1916 there were 2,630 cases in Spain. Switzerland, due to its situation, has a lower rate. Italy's statistics show epidemics in 1888, 1901, and 1911. In 1918, cases due to refugees or shipping were reported. In Greece, smallpox has been prevalent, the number of cases rising with the war. The Balkan states show smallpox occasionally. Since 1914 little has been heard. The disease is almost always present in Turkey, and seldom absent from the principal towns.

The statistics for Africa are few, but sufficient to show epidemics. Arabia and Persia are always sources of infection. Smallpox is one of the principal epidemic diseases of India. The annual average from 1880–1916 is 98,106. In Siam and Indo-China smallpox is epidemic. It is regarded as a necessary evil in China. Education is bringing knowledge of vaccination and care. Japan's case rate is reduced; from January to July, 1917, there were 4,974 cases. In the Dutch East Indies and the Philippines, vaccination has been introduced. An epidemic of mild type began in April, 1913, in Australia; isolation, vaccination, and disinfection were immediately carried out.

Mexico suffers from epidemics. Information is difficult to obtain. Cities' reports show the disease to be present. Central American statistics are poor. Occasional cases are reported. South America recognizes the disease as one of common occurrence. The West Indies are comparatively free from smallpox.

In the United States a mild form of smallpox is prevalent. Occasional deaths show that the virulent type is also present. In both the United States and Canada statistics are incomplete. In Canada, no year is free from deaths due to smallpox. Canadian statistics are given by provinces. Statistical Bureau, Metropolitan Life Insurance Co.

The Principles of Nursing. *Charlotte A. Brown, R. N., Superintendent of Nurses in the New England Hospital for Women and Children. Philadelphia and New York: Lea and Febiger. Ill. Pp. 257. Price, $1.75.*

This book, intended for a text-book for nurses, is up to date in the discussion of the subjects presented. The author, with her years of experience in teaching, is eminently fitted to advise others. The nurse's duty to herself without which nursing technique easily deteriorates, is treated in a chapter typical of the author's originality and good common sense.

The wide range of topics is notable, practically every subject the nurse meets in usual practice has been presented clearly and concisely. The glossary of medical terms with which the nurse should be familiar is especially valuable.

May Bliss Dickinson, R. N.

Hygiene and Public Health. *George M. Price, M. D., Director, Joint Board of Sanitary Control. Second Edition, revised. Philadelphia: Lea and Febiger. Price, $1.50. Pp. 280.*

In this little book an attempt is made to give an epitome of Hygiene and Public Health, omitting personal hygiene. The book is divided into the subjects of housing hygiene, school hygiene, industrial hygiene, public water supply, food supply, milk supply, disposal of waste matter, public nuisances, prevention of infectious diseases, and federal hygiene.

The material is presented in the form of either a series of definitions or a concise account of the principal facts connected with the subject.

One important addition has been made over the previous edition. This is a reproduction of the main features of the report of the American Public Health Association Committee on Standard Regulations for the Control of Communicable Diseases, which appeared in the "Public Health Reports," issued by the U. S. Public Health Service, October 12, 1917. In other respects the book gives the impression of being revised only to a slight extent.

The trained worker in public health may find little to help him practically in this volume, but the beginner and others interested in obtaining a general view of the field will find it of assistance especially in connection with other reading. There are some irregularities in the treatment, for example, while considerable space is devoted to the subjects of antitoxin and the visiting nurse, the Schick test, toxin-antitoxin immunization and the public health nurse are not mentioned.

There is no bibliography and there are but few references. The index is fairly complete.

B. E. R.

The Modern Hospital's New Managing Editor.

The new managing editor of *The Modern Hospital*, Mr. J. J. Weber, has been till now associate director of the Boston Dispensary, and was also eastern editorial representative of the magazine whose editorship he now assumes. His training and experience have given him exceptional equipment for this work. On his graduation from the New York School of Philanthropy, he became director of the Civic Association of Englewood, N. J., a position which he left to take that of financial secretary of the Charity Organization Society of New York. Later he became connected with the New York State Charities' Aid Association. As secretary of the Committee on Hospitals of that association, Mr. Weber was largely responsible for much important work, including community surveys of hospitals in Westchester and Washington Counties, New York, and a critical study of plans of various new hospitals in New York City, and elsewhere. His energy and experience will doubtless extend the field of usefulness of *The Modern Hospital* through many years of the future.

Today's World Problem in Disease Prevention. *John H. Stokes, M. D. Issued by the United States Public Health Service. 136 pages.*

One of the benefits produced by the war is the change in public opinion regarding gonorrhea and syphilis. These diseases have been dragged into the open and are now being attacked with characteristic American energy. In order to cope with them effectively, authoritative information is necessary and this is well supplied in this booklet by Dr. Stokes. Written by an expert, it is a thorough exposition of the nature, source, prevalence, transmission, treatment, cure, and prevention of these two scourges, together with the social, psychologic, economic, and public health background involved. All sides of the problem are presented in a convincing, non-technical manner. Since the booklet is available for free distribution on application to the Public Health Service, it should be in the possession of every health officer, social worker, and practitioner.

JAMES A. TOBEY.

CONVENTIONS, CONFERENCES, MEETINGS.

The JOURNAL will be glad to publish the dates of prospective conventions or meetings of associations whose purposes are allied to those of the American Public Health Association.

November 11–13, Asheville, N. C., Southern Medical Association.

November 11–13, Asheville, N. C., American Child Hygiene Association.

November 11–13, St. Louis, Mo., National Drainage Council.

November 12–14, New Orleans, La., American Society for Municipal Improvements.

November 17–20, Chicago, Ill., American Veterinary Medical Association.

November 23–29, Chicago, Ill., Inter-Professional Conference.

December —, Minnesota Hospital Association.

December 1–2, Mankato, Minn., South Minnesota Medical Association.

December 4, Providence, R. I., Rhode Island Medical Association.

December 15–16, Kansas City, Mo., Western Surgical Association.

1920, January —, Concord, N. H., Health Officers' meeting.

January —, Engineering Institute of Canada.

1920, February —, Canadian Red Cross Society.

1920, March 22–23, New York City, New York State Medical Society

1920, May —, New Orleans, National Conference of Social Work.

1920, May 12, Washington, D. C., U. S. Pharmaceutical Conventions.

In the December issue look for Sir Arthur Newsholme's address at New Orleans together with Papers and Discussions on Federal Health Co-ordination by Five or Six National Authorities.

MISCELLANY

THE DOG IN THE MANGER.

In Slang But—Not A Fable.

It happened down in Miasma County; it is needless to name the state, as similar counties are found in many parts of the South. But Miasma was in the Fever and Ague Belt and Malaria and Hookworm and Typhoid and Diarrhea were and had been plentiful as far back as the Oldest Citizen could remember. The county needed many things in the Way of Progress, but more especially things like Soap and Water, Paint and Tooth Brushes. The Death-Rate was Something Fearful, being largely of the kind called Preventable. The Hookworms were of a Ferocious Type, with appetites for Corpuscles that were insatiable, and the Malaria was the kind that can be Put Up in Packages and sent about from Place to Place. Every family in the county had an Open Surface Privy, if any at all, and everybody took Quinine except the Lady Principal of the County High School and she took Quin-een. It was the Rule and Fashion for everybody to be in a Run Down Condition from these causes and to be Predisposed to Typhoid and Diarrhea—and these diseases did their part.

By far the Most Prominent Citizen in Miasma was Old Doc Richards, the County Physician. Doc had a Reputation that reached Up and Down the Road and he had long been the Big Thing in the way of County Politics. Among the Laity, Doc was looked upon as a kind of Walking Directory of all that is in the Universe; and he did his part toward Keeping Up the Impression. He went about dispensing what is Technically Known as Hot Air and always let it be known that he belonged to one of the Old and Influential Families. Doc wasn't well up on Modern Medicine, but he was a Successful Practitioner. He always carried a can of Peppermint Lozenges and called everybody by his First Name—and that was All That Was Necessary in Miasma. But it was as County Physician that Doc was a Shining Star. The Board of Commissioners regarded him as the Real Thing and the Only One in the County who could properly Hold Down the Job and give "Advice What is Advice." Why, Doc has been County Physician for Years and Years, Stood in With the Better Element, and had a Political Pull that was enough to Make or Break or Change a Board at every election, if he desired. Of course, from Doc's standpoint the $85.00 per was the Real Thing, although he had repeatedly stated that, except for the Good he could do Miasma County and Humanity at Large, he wouldn't have the Job if it was Handed to Him on a Platter with Water Cress Around It.

But the Old Order Changeth and, no matter what happens, Progress Spreads; even if many of us are Inconvenienced by it and are forced to Change our Manner of Thought and our Way of Living. And so it Came About that a few Poorly Paid School Teachers and two or Three Young Doctors who were Jealous read up on the Vital Statistics of the State and had the Audacity to Compare the County's Health Record with that of Other Counties; and they Went So Far as to Put a Piece in the Paper About It and to interest some Business Men in Demanding that the County employ a Whole-Time Health Officer. Now a whole-time Health Officer does away with the Office of County Physician; and Doc Richards was the first one to see that this would be Expensive for the county and, in order to Protect the Poor Tax Payers, he Opposed the Movement.

On the First Monday a Delegation of business men and the Woman's Club appeared before the board and asked for action. The matter was Discussed Pro and Con and it began to look as if Progress had Made a Killing. It was Actually Demonstrated that One Baby Out of Every Four born in Miasma County died before it was Two Years Old. At this point Doc had to explain that Vital Statistics largely depend on the Thoroughness of Reports and that Miasma's rate was high because He, the County Physician, encouraged the people to make the reports. A Young Doctor, just out of the Hospital, asked why the Typhoid Death-Rate in Miasma was ten times higher than the State's Death-Rate from this disease; Incomplete Reports could hardly account for such a High Rate. The Delegation wanted the county to Coöperate with and have the State Board of Health appoint a Trained Health Officer.

There Just Ain't No Telling what would have happened if Doc hadn't got an opportunity to motion to the Chairman to come into the anteroom where the Register of Deeds keeps year-before-last's tax books, the kindling wood, and the broom. After a short Consultation the Chairman called the Board into Executive Session and asked Doc to meet with them, since they were to discuss the county's Health Situation.

At this Executive Session, Doc explained the whole Situation to the Board. He told how Coöperation With the State Board of Health meant the Signing Away of the county's Rights and Personal Liberty and expressed his belief that the Board

of Commissioners of Miasma knew more about the county's Needs than any State Board that Ever Hopped; and, also, that the people had entrusted the Board with the Welfare of the county, —otherwise they wouldn't have been Elected To Office. The way Doc Burned Up The State Board of Health, it's a wonder the Insurance Department didn't get after him for Arson. (But Doc had been having troubles of His Own. On the Q. T., his Practice had fallen off and the High Cost of Living was Getting his Goat.) He made the Board understand that he had always been Doing Things For and To the Poor and that he was Benevolent to Beat the Band, and furthermore that he knew the county Much Better than an Outsider could ever know it. In a word, the People Wouldn't Put Up with having their Taxes Increased to pay a Fancy Salary to a Rank Outsider,—maybe some Yankee who couldn't understand Miasma and her ways. The Board was of the kind that Believe Everything They Read in the Papers and When Doc got through he could tell by the Scared Look on their faces that he had Knocked A Home Run.

Well, the Board was In a Dilemma and a Barrel of Pickles. Doc and the Poor, Oppressed Tax-Payers were on one side and the Drove of Women and Prominent Citizens on the other. The only thing that could be done was to appoint Doc Whole-Time Health Officer and raise his Salary from $85.00 to $200.00 per month.

The County and State Papers heralded the Progressiveness of Miasma County. And Doc Issued a Statement telling of the Wonderful Things he Planned to Do. By the End of the Year he hoped to Run Out Malaria and the Hookworms and make Typhoid and Baby Diarrhea Back Numbers. In a word, the Death-Rate, as soon as it heard that he had been appointed Health Officer, was expected to Roll Over and Come Down and Eat Out of Doc's Hand. And this is the way Health Work began in Miasma County.

And Doc made Quite a Hit. He visited all the schools and told the teachers to Examine the Children, saying that he would Drop Around next year and give more directions. He wrote to the State Board of Health and to the Congressman and the Senator and got All Grades of Health Literature which he packed in the Rear of the Grand Jury Room in the Court House. Also, he offered to vaccinate anybody for typhoid fever who could catch him in his office. Doc, of course, had to Spend Some Time reading Public Health Literature because he wanted Miasma County to have Just as Up-To-Date a Health Officer as anybody's county. Then, he had to attend Health Meetings, whenever the County would Pay His Expenses. But where Doc Starred was in the Health Speeches he made at School Breakings and Woodmen's and Juniors' Rallies. He always did like to go where there was Plenty to Eat and so accepted All invitations because he knew it would offer a Great Opportunity to tell the people how progressive the county was and how it was able to Conduct Its Health Work without the aid of The State Board of Health or of Anybody or Anything. They even asked him to make a Health Talk at the Chautauqua because he was the Only Person in the county that Would and Could make more noise than the merry-go-round. And so Miasma had Health Work for Two Whole Years.

But the Hookworms and Mosquitoes didn't Keep their Contract with Doc; and Typhoid Fever was about as Gay As Ever and Infant Diarrhea acted like it had never heard of a Health Officer. The Vital Statistics Report showed Miasma's Death-Rate to still be up Among the Highest Branches without showing any Signs of Coming Down. And when Election Time Came the folks decided that the County was Spending Too Much Money and Put In a board Committed to Decrease Expenditures. This board's First Action was to Vote Out the County Health Officer, the Demonstration Agent, and the Supervisor of Schools, and allow the county to go back to the Good Old Times when each family took care of itself without having the County or State Meddle with Its Personal Affairs. There was no opposition to this. Doc had proved conclusively to Everybody's Satisfaction that Health Work, along with other progressive measures, is of No Value and is Just Propaganda to furnish jobs to Young Health Officers who are too Inexperienced to Make a Living at Practice.

And so it will be Many a Day—probably a Generation—before Miasma County will again appropriate money to save the Lives of her Babies and the Health of her Citizens. Although fire is an excellent thing, a Burned Child is ever after afraid of it, even if he recognizes that he used the fire in a way he should not have used it. But Doc is still the County Physician and draws his $85.00 per.

B. E. Washburn, M. D.

Raleigh, N. C.

PUBLIC HEALTH NOTES

Abstracts by D. Greenberg, M. P. Horowitz and Mayo Tolman.

Eradicating of Influenza.—Dr. Simon Flexner in his presidential address read before the Tenth Congress of American Physicians and Surgeons (1919) proposes a method of attacking influenza which is worthy of careful consideration. In the development of his thesis he shows that influenza is a disease which is introduced from without. Epidemic diseases have fixed locations, the so-called endemic homes of the diseases. There are excellent reasons for regarding the endemic home of influenza to be eastern Europe, and in particular the border region between Russia and Turkestan. From this Eastern home, at intervals usually of two or three decades, a migrating epidemic influenza begins, moving eastward and westward.

Now since the combating of this epidemic disease, when it becomes widely and severely pandemic, is attended with such very great difficulty and is of such dubious success, and this notwithstanding the prodigious public health contests which are waged against it in which the advantages are all in favor of the invading microörganism, it would seem as if an effort of central rather than peripheral control might be worth discussion. According to this proposal, an effort at control amounting even to eventual eradication of the disease in the regions of its endemic survival would be undertaken, an effort, indeed, not occasional and intensively spasmodic, as during the pandemic excursions, but continuous over relatively long periods, in the hope that the seed beds, as it were, of the diseases might be destroyed.

That such an effort at the eradication of a serious epidemic disease may be carried through successfully, the experience with yellow fever abundantly proves.—S. Flexner, *Jour. A. M. A.*, Sept. 27, 1919, p. 949. (*D. G.*)

Safety Zones for Babies.—Babies who expect to spend their first year of life in a city should take care to choose a "safety zone." According to a report on Infant Mortality in Saginaw, Mich., given out by the Children's Bureau of the U. S. Department of Labor, it is more than six times as dangerous for a baby to be born in one section of the town as in another. The investigations of the bureau have shown that the essentials of a safety zone for babies are that a majority of the fathers in it must earn a living wage, the mothers must not be employed during the year before or the year following the baby's birth, the mothers must receive proper care when their babies are born, both fathers and mothers must be able to read and write, and the babies must be properly housed.

Disease in Army Camps.—The report of cases of special disease in the U. S. camps for the week ending August 8 showed 657 cases of venereal disease and 68 of all other diseases, showing that this is still the great military problem. (*J. E. L.*)

Keep Well Series.—Among the recent publications of the United States Public Health Series are several small pamphlets in the "Keep Well Series," as follows:

No. 3. How To Avoid Tuberculosis. The essential facts concerning the cause, recognition, and prevention of tuberculosis.

No. 4. Diphtheria. How to recognize the disease. How to keep from catching it. Also the treatment.

No. 5. The Safe Vacation. Useful advice on the selection of a place to go. Advice in emergencies arising in lonely places.

No. 6. Cancer. Salient facts, including exposure of popular fallacies.

No. 7. Vaccination. Smallpox and typhoid. Reasons why.

These booklets are distributed free by the Superintendent of Documents, Washington, D. C.

Methods of Louse Control.—The problem which the authors investigated was to find a method of delousing which would be simple, cheap and quick so that with a very small equipment a large number of men may be cleaned in a short period of time. Furthermore to protect men from reinfestation a chemical is required with will not only kill lice, but will also retain its effectiveness for the longest period of time.

At first breeding experiments were undertaken with the object of studying the life history of the louse and some interesting data have been obtained. Clinical studies, too, were carried out and the observations indicate that a macular, erythematous skin eruption, somewhat resembling that of measles or German measles, distributed over the chest, back and abdomen, may occur in a normal individual who allows lice to feed upon the skin of his forearm. In addition to the rash, fever and general lassitude are produced as a result of louse bites, which point strongly toward the presence of a substance in the louse sufficiently toxic to give rise to these clinical manifestations.

Methods of control of the louse in clothes were next studied with the object of determining the value of the ordinary steam laundry processes in garment disinfestation. The experiments undertaken show that the washing of rough cotton goods at 180° F. (82° C.) for 15 or 30 minutes will destroy the lice and their eggs. Washing cotton khaki clothing at a temperature of 120°–130° F. (49°–54° C.) for 15 minutes will prove destructive to the active stages, but will not completely destroy the eggs. Washing for 30 minutes destroyed the eggs. Pressing in the universal press was also effective, but this treatment cannot be relied upon to destroy all the eggs in an infested suit, as portions of the garment may not be touched. The washing of woolen goods requires a special procedure. Infested garments are to be washed at a temperature of 120° F. (49° C.), not to fall below 115° F. (46° C.) for a period of 15 minutes, this treatment destroying the active stages of lice. Garments are then treated in the regular manner until perfectly dry, when they should be placed in the hot air tumbler at a temperature of 150°–170° F. (66°–77° C.) for 10 to 15 minutes. This procedure destroys the eggs. By this method it is possible to launder woolens without shrinkage, and to destroy the lice and eggs without the use of a special chemical.

Where the use of steam or hot air for the sterilization of garments is not available, fumigation may be carried out with great success. Chlorpicrin is superior to the other chemicals recommended for fumigation because of its extreme toxicity, high volatility and ability to penetrate through masses of clothing. It also destroys the eggs and active stages of the lice in a short period of time.

Methods of louse destruction by pediculicides were next tried. The use of sachets containing volatile compounds, and the use of louse powders while effective to some degree would prove to be very impracticable. Impregnation of the garment is the most promising method of control with the use of pediculicides. Active chemicals of low volatility are necessary to prove effective for the longest period of time. Halogenated phenols such as dibrommetacresol, dichlormonobrommetacresol and their sodium salts, dibromcarvacrol, and dibromxylenol were found to be the most promising under laboratory conditions.—W. Moore and A. D. Hirschfelder. An Investigation of the Louse Problem. *Research Publications of the University of Minnesota*, VIII, No. 4. July 1919. (*D. G.*)

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Health Officers' Opportunities in Preventing Occupational Disease.—Many opportunities present themselves to the health officer for helpful research and educational activity in the development of proper supervision of the health of factory workers for the purpose of detecting and preventing diseases which are directly or indirectly due to industry.

The coöperation of the labor unions is a phase which needs to be developed. They should be made to understand the vital significance of health conservation to the welfare of the worker. In New York City the support of a number of intelligent labor leaders was obtained in furthering a program for effective work in industrial hygiene. Through the coöperation of their leaders the four central labor organizations of the city, together with more than 100 subordinate labor unions were organized by the Division of Industrial Hygiene of the New York City Health Department to constitute the Labor Sanitation Conference, serving as a vigilance committee.

Coöperation with manufacturers' associations is also to be sought. Hospital and dispensary staffs and private physicians need to be brought to a keener appreciation of the great service they can perform to society as well as to medical science, by training and equipping themselves to recognize those diseases which are the direct and specific sequelæ of occupation and also the great number of diseases in which occupational factors play a more or less significant part.—L. I. Harris, *Jour. A. M. A.*, Sept. 20, 1919, p. 880. (*D. G.*)

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Toxic Properties of Milk.—Milk heated to 80° or 85° C. for from twenty to thirty minutes and kept at 37° C. decomposes with the elaboration of definite poisonous substances, a fact which, Ford says, should be kept clearly in mind in the consideration of the problem of milk pasteurization; and, under all circumstances, milk heated to temperatures sufficient to destroy vegetative bacteria but not their spores should be kept at a low temperature to prevent the development of these spores and should be used within a brief interval after the heating. Whether the bacterial products found in this decomposed milk have any poisonous action when taken into the digestive tract has not been determined, but in view of their presence in milk the practice of keeping pasteurized milk for any considerable period of time before using is condemned strongly by the author. Finally, the occurrence of toxic substances in heated milk arising from the development of spore-bearing bacteria requires a rigid supervision of milk production before pasteurization to prevent the entrance of organisms of this character.—W. W. Ford, *Amer. Jour. of Diseases of Children*. Sept., 1919, p. 199. (*D. G.*)

Ambulatory Motor Clinic of the Chicago Tuberculosis Institute.—Through the courtesy of James Minnick, Superintendent of the Chicago Tuberculosis Institute, the JOURNAL is able to present a picture of the motor vehicle and a story of the work of the clinic.

More than two years ago, the Institute extended its activities to include the whole of Cook County, and sent its exhibit to all parts of the county. In coöperation with the Bureau of Social Service of Cook County the Institute furnished nurses to work with the regular county nurses. Clinics were established in Oak Park, Blue Island, Des Plaines, and Argo. These were all conducted by physicians of Oak Forest, excepting that at Oak Park.

The influenza epidemic required additional nurses and since the county had no funds for the purpose the Institute employed ten nurses for this special work. The nursing service proved so valuable, and so great has been the demand for it that it has been continued on a larger scale than before the outbreak. A coöperative plan has been entered into with fourteen of the county towns whereby the cost of a full-time nurse is equally divided between the county and the Institute. In addition to these fourteen nurses, the Institute employs five additional nurses for purely rural nursing service.

With the increase of this nursing service, there were demands for clinics in all parts of the county. It was impossible to establish a permanent clinic everywhere for a number of reasons, the great cost, the lack of medical service and the smallness of the communities among them. It was decided, therefore, to construct a clinic on wheels that could be used wherever needed.

A study of the Government traveling dispensaries was made, but an entirely different plan was adopted. The main body of the car is a room 6 feet wide by 9½ feet long, and 6½ feet high. The driver's cab, usually large, is provided with curtains which when drawn make a dressing-room for patients coming for examination. The seat in the cab is so constructed as to furnish a bed for the chauffeur in case he has to be out over night with the car. Entrance to the examining room from the driver's cab is by means of a sliding door. The tail gate of the car when open, with specially constructed folding doors makes another dressing-room at the rear of the car. By this arrangement patients come and go at each end of the car, thus saving the time of the physician. There is a special compartment over the driver's seat used for storage and for the 15 gallon water tank needed in the clinic.

The main room of the car has the usual dispensary equipment. The furniture is all steel and painted in white enamel. Everything is clamped to the floor so as not to be disarranged when the car is in motion. The car rests on jacks when at its stations. The equipment in furniture is the following: wash-stand with running water, table for doctor's use, desk for nurse's use, and for filing of records and other material. Three steel lockers provide for storage of instruments and clothing. The equipment is more than usually complete so as to care for emergency cases which may be met

Health Clinic Motor Ambulance.

while on the road. Beneath the car there are three boxes built to contain the tools and electrical wire equipment. There are two wiring systems, one from the batteries and the other to be connected with the regular current available in school and town buildings which furnish light, and in the winter time, heat, for the electrical radiators of the clinic.

The full circuit includes about 42 different towns which it visits according to a regular time schedule.

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Facts About Rats.—Rats yearly do damage in the United States to extent of more than $100,000,000 of which $15,000,000 is represented by fires caused by rats eating away the insulation of electric wires and gnawing through gas pipes. The damage to buildings through the gnawing of heavy timbers and to the bindings of books in libraries all count towards the total, but a loss that probably cannot be calculated is that due to sickness spread by the rat. Rats have carried the black plague from India into every continent on the globe. No premises will be free from the dangers of disease until the rats have been completely exterminated. (*M. T.*)

STATE HEALTH NOTES—LEGISLATION

National.—Through the courtesy of the Hon. Joseph I. France, Senator from Maryland, Chairman of the Senate Committee on Public Health and National Quarantine, the JOURNAL is enabled to present this view of the status of health legislation in the Congress. The legislation under consideration which has been referred to this committee includes: Senate Joint Resolution 76, for the investigation of influenza; S. 759, to authorize veteran physicians and surgeons of the late war to practice anywhere in the United States; S. 813, to establish a U. S. P. H. S. Sanitary Reserve Corps; S. 814, to establish a Department of Health; S. 1049, to provide for reinstatement in the U. S. P. H. S. of men who resigned for the purpose of enlisting S. 1660, to provide a Division of Tuberculosis in the U. S. P. H. S.; S. 2207, to admit civilian employees of the government to the Army or Navy hospitals; S. 2507, to establish a Department of Public Health; S. 2616, with reference to the Census; S. 2785, on drug addiction. From the chairmen of the committees of the House to which the bills have been referred there have been received: H. R. 8954, to prevent manufacture, sale or transportation of adulterated foods, and H. R. 9521, to prevent hoarding of foods and to regulate shipments of cold storage foods. The Senate bills were formally read and referred to the Senate Committee on Public Health, with exception of S. 2616, which was referred to the Committee on the Census, while the House bills have been referred to the committees on Agriculture and Interstate Commerce, respectively.

Senate Joint Resolution 76 has been reported by the committee and is now before the Senate. It appropriates $1,000,000, available till expended, to enable the U. S. P. H. Service to investigate influenza and allied diseases, and for allotment of sums to research institutions for the purpose of discovering causes and methods of prevention of these diseases. The money is to be disbursed by the Secretary of the Treasury, and may be used in various related matters, including salaries, supplies, printing, rent and publicity. The allotments to universities, colleges or research institutions are not to be limited to any one school of medicine. The Resolution provides that the secretaries of War, Navy and Treasury be directed to utilize jointly the personnel of their respective medical departments and that of the U. S. P. H. Service.

S. 2507, for a National Department of Health was introduced by Senator France on July 17. It follows the general plan of the Owen bill, S. 814, with important modifications.

It provides for a department of public health under the direction of a secretary, who shall be a member of the cabinet, and for three assistant secretaries, the first assistant to be a man trained in medical science, public health and sanitation; the second to be an expert in vital statistics; and the third to be a woman trained in medicine or nursing and public health. The U. S. Public Health Service and the Bureau of Chemistry are to be transferred to the new department, which is also to have bureaus on vital statistics, sanitation, hospitals, child and school hygiene, quarantine, food and drugs, nursing, tuberculosis and personnel. The secretary of public health is directed to communicate with the governor of each state requesting him to recommend to the legislature suitable legislation with adequate appropriations to secure coöperation between the Federal Department of Public Health and the State Board of Health. Every state taking such action is to be entitled to its proportionate share of such funds as may be appropriated by Congress for carrying out the provisions of the act. The secretary of public health is also directed to divide the United States into health states, districts, subdivisions and precincts, each conforming to the geographical boundaries of the various political divisions. Each state is to create a state board of health with a state health officer and a health officer for each district, subdivision and precinct, the secretary of public health to appoint these state officers as Federal health officers "so that in each coöperating state every health officer of said state or of each district, county or precinct therein is by virtue of his selection by the local authorities become also a federalized officer and as such an integral part of the Department of Public Health." The Department of Public Health is directed to coöperate with the Departments of Commerce, Labor and the Interior in the collection of vital statistics and to establish a uniform system of cards, records and reports regarding diseases, disabilities, industrial accidents, births, deaths, physical condition of school children, the number and condition of existing hospitals, etc. The bill provides for the appropriation of $15,000,000 for 1920 to be prorated among the states in proportion to their population as soon as the states comply with the provisions of the law and the regulations of the secretary of public health, provided that each coöperating state must contribute to the public health work a sum equal to that contributed by the Federal government and that it must make full and complete reports of births, deaths and morbidity. It also appropriates $48,000,000 for the construction of sanatoriums and hospitals, this sum to be distributed among the states in proportion to their population, each state receiving its allotment

to provide an equal amount, also location, plans and means of future support for the proposed hospital.

Under this bill there will be in every county of the United States a public health officer, at once the local and Federal health officer, so that coöperation will be assured between all of the health promoting activities for the benefit of the community. The underlying principle of the bill is the coöperation and coördination of all the health administration from the national officers to the civil agencies in the smallest villages. It is urged that there will be not only conservation of energy but actual economy in expenditures.

S. 759 is a bill, which while general in its specifications so correlates them as to focus them upon an individual, who is to be given a roving commission to practice medicine and surgery wherever the flag of the Union flies. S. 1049 provides for the reinstatement in the U. S. Public Health Service of medical men or employees who resigned from the service to enter the Army or Navy, and who did enter one or the other. Such men after honorable discharge shall be restored to former position in the service and to the same seniority in rank and position.

S. 1660 has been reported to the Senate by Mr. France's committee. It provides for the establishment as a part of the U. S. P. H. Service, an additional division to be known as the Division of Tuberculosis. This shall be under the direction of a commissioned medical officer of the Service, who while serving shall have the rank of Assistant Surgeon-General. The bill further provides for an Advisory Council for consultation with the Surgeon-General of the Service, relative to the scientific work to be inaugurated by the Service and the methods of performing it. The Council is to consist of ten competent men, selected because of their special knowledge relating to public health, to be appointed by the Surgeon-General with the approval of the Secretary of Treasury. Their initial terms are to be staggered, two members to retire each year, subsequent appointments being for five-year periods. The compensation is to be $10 a day for actual duty with a maximum of $100 in any one fiscal year, and actual traveling expenses. This Council is to take the place of the Advisory Board of the Hygienic Laboratory, which is to be abolished. It is hoped in Washington that the Senate can come soon to the consideration of this bill.

S. 2616, introduced by Senator France and now before the Committee on the Census, has been popularly described as "Sense in the Census." It is intended to repeal and reënact certain sections of a previous act to provide for the Fourteenth and subsequent decennial censuses. It provides for the beginning at once of certain inquiries, and for the publication of Official Federal Registration Lists every year, such lists to be sold at reasonable prices under the direction of the Director of the Census. There is proposed a restriction of the Fourteenth Census to inquiries relating to education, health insurance, agriculture, manufacture, forestry and forestry products, mines and quarries and to the population of the United States and colonies.

A card index of the population is provided for, to furnish continuous records of each individual. These are to be made so as to be available for use in vital, educational and industrial statistics, as a basis for the formulation of legislation to promote general welfare, defense and safety by improving the vital, educational and industrial condition of the inhabitants. The items that are to be recorded are named in considerable detail.

The section on the inquiry relating to public health and insurance specifies data useful for the standardization and extension of all existing public health agencies, and for the promotion of rational insurance systems, particularly with the purpose of limiting the ravages of tuberculosis and other communicable diseases, preventing industrial disease and accidents and the destitution consequent on such accidents and sickness. There shall be a survey and tabulation of vital statistics of the population, a survey of public and private health agencies, of public and private hospitals and sanitoria, of industrial accidents and conditions, of housing conditions, of old age, health, accident or other forms of insurance, etc. There is provision for two commissions of three members each at $5,000 a year salary, one on education and the other on public health, vital statistics and insurance, to confer with the Director of the Census as to the most efficient methods of collecting and classifying data with reference to these subjects.

Other sections refer to the inquiries with reference to agriculture, manufactures, mines and quarries, etc., and outline the form of administration. It is provided that one properly qualified, regularly licensed physician shall be appointed as Medical Supervisor for each census precinct, and one such physician as Medical Director for each census district, whose duties it shall be to assist in the collection of the health and vital statistics. Provisions are made for the census of men in the Army, Navy and executive departments of the Government.

S. 2785, introduced by Senator France, has been considered by the Committee on Public Health and National Quarantine and is now before the Senate for action. This bill provides for the coöperation of the government with the states in the care of drug addicts. Financial means are offered by the

government with the proviso that an equal amount shall be appropriated by the state. Buildings belonging to the government may be used by the state together with equipment and medical supplies including narcotic drugs, with the approval of the Secretary of the Treasury. A portion of the appropriation may be used for research or educational work, with the necessary administration for this. Although the act does not specifically state it, it is evident that the administration of the act will come upon the U. S. P. H. Service, and the secretaries of War and the Navy are authorized to transfer to the Service without charge hospitals and equipment not necessary for their own uses.

In introducing his bill Senator France called attention to the fact that the transfer of hospital facilities is an emergency measure of utmost importance. The situation is serious in the country. There is a failure to enforce the Harrison anti-narcotic law, necessitated by the lack of facilities for the treatment of addicts, who should have hospital care and skilled treatment. Senator France calls for the enforcement of the Harrison law, to prevent the increase in narcotic users, increased by the turning of those accustomed to alcoholic beverages to drugs under prohibition. The time is favorable on account of the great equipment of the Army and Navy that is not now necessary to them.

S. 2207 has likewise been reported to the Senate by committee and now awaits action. It has the merit of brevity, consisting of a single paragraph. It provides that civilian employees of the United States Government stricken with tuberculosis while in the employment of said government shall be admitted, so far as capacity may allow, to the hospitals already established for the Army or Navy or for the Public Health Service, on the same terms accorded those already entitled to admission.

The two House bills, 8954 and 9521, were introduced on September 2 and October 2, respectively. The latter has been twice read and is now before the Committee on Interstate Commerce. It provides for the marking of cold storage food or the container, with the label, "Cold Storage," with all the dates and the name of the warehouse. Subdivisions of original cold storage packages must be labelled. Marks must not be removed or altered; food must be sold within one year of the date when first placed in cold storage; and approval following inspection is necessary for warehouses and vehicles. Penalties are provided, fine or imprisonment or both; sections outline the administration; and $50,000 is provided to be expended by the Secretary of Agriculture for the administration.

H. R. 8954 is an amendment to a section of the bill against adulteration or misbranding, approved in 1906 and amended in 1913. It relates largely to the technical details in the interpretation of the terms, "adulteration" and "misbranded."

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Manitoba.—The Province of Manitoba at the 1919 sessions of the Legislature passed legislation entitled, "An Act for the Prevention of Venereal Diseases." The Provincial Board of Health is authorized to make regulations with a view to preventing the spread of the diseases. The regulations as they now stand define "venereal disease" to mean and include syphilis, chancroid and gonococcic infections. A dispensary is established in the city of Winnipeg under the administration of the Provincial Board of Health. Other dispensaries may be established in other parts of the Province. Cases of gonococcic infection are to be considered infectious until all discharge has ceased, or at least two successive smears taken not less than 48 hours apart, fail to show gonococci. Cases of syphilis shall be considered infectious until all lesions are completely healed. The Chairman of the Board may require the submission of specimens from cases for examination. Physicians are to submit these when required to do so. All persons coming to the dispensary for treatment must continue under treatment until they are no longer able to transmit the disease. The dispensaries will issue salvarsan or its equivalent without cost to hospitals and to patients under treatment. No person except a physician shall attend or prescribe for any person suffering from venereal disease. Every physician shall report cases within 24 hours. Cases may be reported by serial number only, the physician keeping a record by which the patient may be identified. Persons in jail may be examined and treated if necessary. Physicians are not to be liable to any action for reporting cases or giving evidence thereon. A heavy penalty is inflicted on anyone who knowingly infects another person with a venereal disease. Patients must be treated at least once in every two weeks until cured. If a patient changes his physician, the new physician must notify the board of the change. If a patient fails to attend for treatment for one month, the physician shall report the name and address of the patient to the chairman. Every physician is required to warn his patients of the contagious nature of the disease and also of the danger of contracting any marriage until cured. Physicians may not give a certificate of cure to any person suffering from venereal disease. Bacteriological examinations are free of charge. The Chairman of the Board may require any person who is believed to be suffering from venereal disease to be examined. If the report discloses that the patient

is in an infectious stage, such person may be detained in any dispensary for such a time as may be necessary. A penalty may be inflicted on anyone who obstructs the carrying out of a warrant. The chairman may enter any premises for the purpose of making enquiry or examination with respect to the state of health of any person therein. Every hospital receiving aid under "The Charity Aid Act" must receive persons suffering from venereal disease on the same terms as other patients. If a patient is unable to pay for treatment, the Board may pay for him and charge the cost to the municipality. No person afflicted with venereal infection shall be employed in the preparation of milk or foodstuffs or in nursing. All city and other medical health officers are, for the purpose of the control and supervision of venereal disease appointed inspectors without salary. It is an offense with a maximum penalty of $500 to advertise remedies. Exception is made in the case of articles approved by the board and books and papers published in good faith for the advancement of medical science. Every person employed in the administration of these regulations is required to preserve secrecy with regard to all matters that may come to his knowledge. Lawful and proper remedies and methods of treatment are prescribed in the regulations. A penalty of not less than $10 and not more than $100 is prescribed for a violation of any of the regulations except when a higher penalty is specifically mentioned.

Alabama.—The bill proposed by the State Board of Health, known as the McLeod-Cowan bill has just passed. Its principal features are: Appropriations of $90,000 the first year, $125,000 the second year and $150,000 each year thereafter; adoption of the model law for vital and mortuary statistics; adoption of latest methods for reporting notifiable diseases; strict venereal control regulations; regulations on midwifery; prevention of blindness in the new-born; provisions concerning water supply and soil pollution; inspection of hotels, restaurants, meat and milk shops and dairies, and barber shops; abolition of part-time health officers; and adoption of the full-time county health officer plan with the county as a unit. The law further gives the state health officer, with the approval of the State Board of Health, the authority to remove inefficient county health officers.

Georgia.—Through an appropriation incorporated in the general bill a sum of $20,000 is provided for the general training of public health experts, which will be carried on at the Medical College of Georgia, Augusta, Ga.

Michigan.—Senate Enrolled Act No. 78, before the legislature, is an amendment of the act of 1917 for the formation of health districts by contiguous townships and villages. The new version provides for the selection by ballot by the Board of Trustees of each village of a member of the district board of health to be a resident of the district, members of the township boards, common councils or boards of trustees being ineligible. The persons so elected shall constitute the district board of health. Tenure of office on this board is for two years or till a successor is elected. The organization of the district board is to be effected and officers are designated to be, a president and a secretary and treasurer. The board shall have oversight of the public health in the district, with authority to make regulations "not repugnant to the general laws of the State." These regulations are backed by penalties. The second section of the old act which has been amended outlines the technique of preparing estimates and the apportionment thereof among the townships and villages in the health district.

Minnesota.—The new Childrens' Code prepared by the Child Welfare Commission which was appointed by Governor Bunquist in 1916 to study the social needs of children, incorporates many phases that should be of interest to all concerned in Public Health and Infant Welfare.

The commission proceeded on three fundamental principles:

(1) That a child is entitled to be born into the world sound in mind and body.

(2) That he is entitled to the fullest opportunity for growth and development consistent with his capacity and circumstances of life.

(3) That he should have protection against his own anti-social tendencies and correctional restraint when necessary.

As a protection against the ever increasing numbers of feebleminded persons that roam the community, reproducing their kind and filling our almshouses and jails, the law provides that such persons may be committed, through the probate court, to the state's care under compulsion and without their consent or that of their guardians. A feebleminded person is defined as one "so mentally defective as to be incapable of managing himself and his affairs and to require supervision, control and care for his own and the public welfare."

The second feature of the law is that patients are not committed to the already over-crowded institutions but to the care and custody of the State Board of control.

The law takes cognizance of the physically defective in a section that reads in part as follows:

"The term neglected child shall mean a child . . . where parents or guardian neglect and refuse, when able to do so, to provide medical, surgical, or other remedial care necessary for his health and well being." Cases where the parents through ignorance or stubborness fail or refuse to provide medical care for children badly in need of such care shall be brought to the judge of the juvenile court and the parents made to take proper action or the judge will appoint a guardian who will do so.

The law further requires that all maternity hospitals shall be licensed, that all births shall be reported to the State Board of Control as well as to the Department of Health and that if a child is illegitimate the fact shall be specifically noted.

Finally a joint resolution of the Board of Control and Board of Health was passed with view of recognizing the fact that breast fed babies stand a better chance of beginning a sound, healthy life than those who are artificially fed. The resolution reads to the effect that no patient shall be received by any person, or at any hospital or institution licensed by or under the supervision of either of the said boards on any basis other than that the mother shall nurse her own child so long as she shall remain under the care of said person, hospital or institution. Provided, that when nursing by the mother is impossible for any physical reason, exception to the above rule may be made by either board acting upon medical advice.

STATE HEALTH NOTES—GENERAL.

New Brunswick.—The Department of Health of New Brunswick is gradually getting into complete organization. With the exception of one county, the whole province is now under the immediate jurisdiction of subdistrict boards of health. These number fifteen in all, and each has a permanent staff, paid by regular salaries, fairly adequate to the location and work to be done. The work of these boards is supervised by their district medical health officers, each having charge of a section of the province known as the Eastern, Southern and Western Health Districts. During the short time these boards and officials have been in office, they have been doing satisfactory work which will improve in character as they become more accustomed to the situation.

Over the whole province, with the above noted exception, a system of medical examination of schools has been put into operation, there being about one hundred medical men engaged in this work, in the immediate employment of the various subdistrict boards. Each, like all the other members of the board staffs, is paid by definite yearly salaries, the old vicious and extravagant principle of remuneration by fees, having been entirely eliminated, except in emergencies when the staff requires to be suddenly but only temporarily increased.

In a very little while, what is hoped to be a complete and efficient system of collection of vital statistics will have been put in motion. This service, also, will be altogether under the control of the health authorities, and will be practically administered by employees (paid by salary) of the subdistrict boards. It will be under the general supervision and management of the chief medical officer of the Department at Fredericton, who, for the time being acts as registrar general for the province.

Having in view the entirely novel character of these services and the method of administering them, it is asserted that the machinery involved is already working with little friction. This is largely in consequence of its well-knit construction. The whole administration forms a department of the Provincial Government, with a minister of that government at its head, and with a chief medical officer as his executive. Each officer from the top to the bottom is a very distinct and responsible link or part of the whole machine, and, under the laws and regulations, each has his clear duty to perform with no possible doubt as to its nature.

(G. G. M.)

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Nova Scotia.—An international organization, the Massachusetts-Halifax Health Commission, recently incorporated under an act of the Provincial Legislature, has entered upon its duties. Its management includes nine of the leading men of the province under the chairmanship of Mr. C. Fred Pearson, namely, Hon. R. G. Beasley, vice chairman, and Mr. H. R. Silver, Mr. J. L. Hetherington, Judge W. B. Wallace, Mr. T. S. Rogers, K. C., W. H. Hattie, M. D., provincial health officer, H. A. Payzant, M. D., medical officer of health of Dartmouth and M. A. Macaulay, chairman of the Halifax Board of Health. The special province of the commission is to combat to the greatest possible extent the potential increase in disease, and the name comes from the fact that the funds will be distributed by the Massachusetts-Halifax Relief Commission, so efficient following the recent disaster. A health center is to be established in which there will be coöperation, health education, preventive effort and health administration, with the desire to coördinate helpful agencies here, dispensary advice and nursing care.

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Alabama.—This state has recently undertaken an educational survey at a cost of nearly $25,000. The legislature appropriated $10,000, and the United

States Bureau of Education did the rest. The Bureau of Education made the survey. It was done by specialists. There was a specialist in rural education, and a specialist in higher education, and one in administration, and one in home economics, and one in agriculture, and one in child health, and so on—some twenty or more all together. Their report is published by the Bureau of Education, Washington, and can be had for the asking.

In the survey Chambers County was selected for health studies. If you were to take the states of Georgia and Alabama and put them together, Chambers County would be almost in the middle. It was found that some three out of a hundred children had almost lost the vision of one eye through disuse.

Georgia.—From January 1 to September 1, 1919, there were reported to the State Board of Health by the county health officers, city health officers, and the various private practitioners of the state, 769 cases of typhoid fever.

Possibly an annual average for the last ten years would have showed more than four times the number reported this year. There is no way of ascertaining the exact number for any previous year, as the Georgia State Board of Health did not begin a systematic collection of these reports of contagious and infectious diseases until January, 1919.

Several factors have been responsible for the decline in prevalence of typhoid fever; a large number of sanitary privies have been installed, vaccine has been distributed and administered, a regular system of health education has been instituted and many popularly worded bulletins have been distributed.

The Division of Venereal Diseases under Joe P. Bowdoin, M. D., is waging a vigorous educational campaign with very plain statements concerning the magnitude of venereal infection in Georgia. The authorities set it forth as a community problem, and as such it will have to be solved. It is your community problem, and upon the community comes the responsibility. Every community has its cases; has its problems.

Coming from the home communities, fresh from the home town, in the second million men examined, Georgia boys brought to the cantonments 10 per cent of venereal infection. In other words, one Georgia boy out of every ten had a venereal disease when he entered the army.

"With 300,000 of our people ill of venereal diseases," writes Dr. Bowdoin, "do you not think it is time to forever close all red light districts and hunt for all sources of infection?

"The clean life of our soldier boys while in the army with only one infection to 1,700 men per month should put us to shame."

Iowa.—The seventh annual session of the Mississippi Valley Conference on Tuberculosis was held at Des Moines, Iowa, on September 22–24, 1919, under the presidency of Sherman C. Kingsley, of Cleveland, Ohio. More than five hundred workers were present from the twelve states comprising the conference. Resolutions were adopted urging the necessity for uniform legislation for the control of tuberculosis; for more complete coöperation of governmental and extra-governmental agencies engaged in public health work; and the continued use of the Red Cross Christmas seal as a means of carrying on the anti-tuberculosis campaign. Officers elected for next year are Dr. John H. Peck, Des Moines, president; Dr. W. McN. Miller, St. Louis, vice-president; and Dr. A. T. Laird, Duluth, secretary-treasurer. Mr. Kingsley was elected to the executive council and Mr. Nels A. Nelson, Cincinnati, and Miss Charlotte Ludwig, Cleveland, were elected to the advisory council to represent Ohio.

Michigan.—Lansing has prepared its plans for its new $75,000 isolation hospital. The structure is to be 100 feet by 50, three stories in height, of pressed brick and fire-proof construction. One of the features of the basement is a chapel in which the last rites may be administered. There will be four wards each on the first and second floors, the third floor being for the accommodation of the nurses. Some of the special arrangements worthy of mention are a separation of the receiving and discharging rooms, and observation corridors in glass through the wards. Through the latter it is proposed to give friends and relatives an opportunity to see their sick friends without the risk of infection.

New York City.—Visitors to the International Exposition of Municipal Equipment, which has just opened in the Grand Central Palace, New York City, while it has to do with the larger equipments of cities in the way of streets, roads, engineering, water power and public utilities, will find in this group large divisions which have to do with public health. Sewage disposal is among these, milk pasteurization, a health center has been installed, there is the exposition of hospital equipment, and a considerable display of material touching on parks and playgrounds. The exposition is to be permanent and will be an opportunity not only for health administrators but for the officials in charge of the lower departments of municipal activity. William Parr Capes, director of the New York State Bureau of Municipal Information, is chairman of the advisory committee, while among the names well known to public health officers are, Matthias Nicoll, Jr., M. D., in charge of the section of health; Rudolph

Hering of New York City and Samuel Greeley of Chicago, of the section of sewage and garbage disposal and Myron Kesner of Dallas, Texas, of the section of parks and playgrounds.

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New York.—On August 12, 1919, an order was issued by Governor Smith under the provisions of Section 6 of the Public Health Law, requiring the State Commissioner of Health to investigate the pollution of the waters of New York Bay and Jamaica Bay and their tributaries by the discharge of wastes from manufacturing plants engaged in the manufacture or production of coal tar or aniline by-products or wastes, including gas houses, and to report before September 1, 1919. Some sixty-seven plants of the character mentioned were carefully investigated by the Engineering Division and a report was submitted to the Governor by the Commissioner within the time limit stated. The investigation developed the fact that the pollution of the bay responsible for the objectionable conditions of the bathing beaches complained of was traceable, largely if not wholly, not to the manufacturing plants referred to, but to oil tankers which transport crude and refined oil to and from ports in the vicinity of New York Harbor, or from industrial plants handling these oils. A further investigation of this phase of the matter was therefore made and a report covering the investigation was transmitted to the Governor. This report fully confirmed the findings of the previous report and pointed out that the control over this pollution is largely, if not wholly, in the hands of the Federal authorities.

Beginning with the 16th of September a series of sixteen conferences has been held for the benefit of the health officers of thirty-six counties. The sanitary supervisors have called their health officers to some central locality for a conference on health matters. The subject of health coördination committees in rural municipalities has been presented, rural public health nursing has received considerable attention and the question of the control of tuberculosis and venereal diseases has also been discussed. The subject of post-graduate course in public health work has been taken up; also industrial medical departments, and the new New York State Laboratory and its functions. The conferences have been generally very well attended. An innovation this year has been the invitation to local public health nurses to attend these conferences. The discussion in many instances has been very useful in clearing up problems which health officers have experienced in their localities. The conferences will be continued during the month of November for the health officers of the remaining counties.

Examination of sanitary conditions at the following state institutions has recently been made by the Engineering Division and reports containing recommendations for improvements transmitted to the institution authorities: Sing Sing Prison; House of Refuge, Randalls Island; New York State Training School for Girls, Hudson; Utica State Hospital; Syracuse State Institute for Feeble Minded Children; Auburn Prison; Buffalo State Hospital; Long Island State Hospital, Brooklyn; Kings Park State Hospital; Manhattan State Hospital, Ward's Island; St. Lawrence State Hospital, Ogdensburg; Eastern New York Reformatory, Napanoch.

During the summers of 1917 and 1918 the Amsterdam Anti-Tuberculosis Committee conducted two highly successful summer camps for the children of the city. The past summer the work was extended, through the consolidation of the city and county committees, to the children of the entire county. One hundred and forty-six children were given from two to eighteen weeks' outing, the time depending on individual needs. Practically all the children were actually running increased temperatures, and came from homes in which there had been deaths from tuberculosis. Children from every town in the county were represented, and it is hoped that the demonstration of the need of a permanent preventorium as part of the county hospitals needs, has been shown in such a way that it may soon be part of the institution.

A public health forum was recently held in Dobb's Ferry under the joint auspices of the local health department, the Westchester County Chapter of the American Red Cross, and the New York State Department of Health. Addresses were made by Dr. Robert Dennison, health officer, and Dr. P. H. Mason, sanitary supervisor, after which several health films were shown. The health exhibit was under the direction of Mrs. Harriet Smith and Miss Helen Hubbell assisted by the state and county public health nurses. As a result of the forum a little Mothers' League was formed.

Some two hundred cases of typhoid fever have recently occurred at Tonawanda coincident with the lowering of the intake of the public water supply system. Extended investigations are being made by the Division of Communicable Diseases and the Engineering Division in an effort to aid the city authorities in the suppression of the epidemic and the improvement of water supply conditions. It was learned by these investigations that a break in the intake pipe line had occurred near the shore allowing contaminated Niagara River water to enter the mains.

The annual convention of the New England Waterworks Association was held in Albany Sep-

tember 30 to October 3. The proceedings were opened by a paper on "The Supervision of Public Water Supplies in New York State by the State Department of Health," read by Mr. Theodore Horton, chief engineer in the department.

Jamestown organizations interested in better health and civic conditions have petitioned the Park Board of that city for the temporary use of the Gilbert homestead in Memorial Park for a health center. A health coördination committee has been formed at Hudson and has rented rooms which are to be used for a health center.

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North Carolina.—That the people of the state are in dead earnest in their desire to meet the requirements of the State Sanitary Law could be no better illustrated than by the type of sanitary devices being so generally favored. The State Sanitary Law is sometimes called the Sanitary Privy Law, but this is not correct, for the goal ultimately looked to in all cases is the sanitary sewer. A multitude of towns have decided that the best is none too good for them, and are therefore making immediate preparation for replacing all existing insanitary privies with modern sewerage. More than fifty towns in the State are known to have taken this action already, and many others are daily being added to the list. Sewer systems, of course, presuppose water systems. In many instances the water has already preceded sewerage, but in many others it is necessary not only to build the new sewers, but to install water systems as well, which makes the action of the towns not only more commendable, but likewise more valuable.

Gratifying results in the fight being waged against typhoid fever in North Carolina by the State Board of Health are shown in the number of cases reported for the past month. For that period there were 741 cases reported as against over 800 for the same month last year. The reports for the first half of August are still more encouraging. August is the worst month in the year for typhoid fever, the number of cases and deaths from this cause always showing highest for this month. But this year for the first fifteen days of the month only 291 cases were reported for the State as a whole, by far the best record since reliable statistics have been available.

In nine different sections of the state the people of North Carolina, on October 1, became acquainted with an entirely new experience. The State Sanitary Inspectors began their work in their respective districts on that date, and this was the first instance of exactly this kind in the history of the Nation. It happens that in this step, which is considered generally as the most progressive step ever taken by any state, North Carolina leads the way.

The excellent progress being made by the State Sanitary Inspectors is even beyond expectation, according to Dr. W. S. Rankin, who is the author of the state-wide plan. Dr. Rankin states that in his opinion one principle which is largely responsible for the hearty reception accorded to this law is the fact that the inspectors are not policemen and do not approach their work in any way suggestive of that attitude. It is at once apparent that the law itself meets the hearty endorsement of all thinking people. The inspectors are principally concerned in helping the people of each community to determine the best ways and means of following the specifications of the law in order to make it most effective.

Some of the advantages ensuing from the new sanitary law in North Carolina are these:

1. System takes the place of confusion and disorder, which would otherwise ensue.

2. The individual is relieved of the trouble of securing labor and material for the work required. He puts in his order with the city officials and is through with it, except for paying for actual cost of labor and materials.

3. All materials and labor are procured by the town at wholesale rates, which effects a saving of at least 25 per cent to the individual.

4. A far better quality of work is obtained in most instances.

5. The city loses nothing, but gains immense favor with its citizens.

6. It is the application of business-like principles to the necessities of a community, which, in addition to the foregoing, accomplishes the task in a prompt and decisive manner.

With but one exception, the towns approached with these suggestions have seized upon them and put them into practice. Indeed, a town which fails to see the wisdom of this course is painfully short-sighted, and its citizens should cry out against such an inexcusable disregard for their welfare.

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Ohio.—The extension course which is being held at Ohio State University, Department of Medicine, for public health officials, is well attended, more than forty persons having now enrolled. The object of the course is to prepare physicians and others interested in public health work, for the new positions to be provided by the Hughes act. On January 1, 1920, there will be nearly a hundred vacancies in the state for full-time health commissioners, at salaries ranging from $2,000 to $6,000. There will also be a large number of vacancies for public health nurses, and sanitary inspectors. The course

is being given by University teachers and public health officials, and consists of lectures and laboratory and field work for a period of three months. No degree will be given, of course, but candidates who take this course will be given credit for three months experience in public health work. Particular attention is being paid to public health problems of the state as a whole and of its political subdivisions. Nearly all those in attendance are physicians who aspire to become health commissioners of general and municipal health districts. The course is open still to persons having had at least one year's practical experience in public health work. There is no fee required. The courses will close December 12.

Up to date twenty-four clinics for the treatment of venereal diseases have been established in Ohio by the State Department of Health and United States Public Health Service in coöperation with local voluntary or official agencies. There has been recently a marked improvement in the venereal disease reports sent in by physicians, and this is because some use is now being made of these reports. A considerable number of persons in some of the cities of Ohio have been quarantined for venereal disease on the order of the State Health Commissioner. Dr. R. G. Leland, formerly of Michigan, is now Chief of the Bureau of Venereal Diseases, and every indication points to a vigorous campaign being waged in Ohio.

The Ohio State Department of Health has prepared a complete organization to deal with influenza should it recur this year. The names of two hundred Ohio physicians willing to undertake service as officers of the United States Public Health Service are being secured. The new district boards of health organized under the Hughes act have been advised that they will be used, if necessary prior to January 1, 1920, as rallying points of the activities of the counties they represent. Information as to the presence of influenza, any increase in the number of deaths from respiratory diseases, and any increases in the general death rates, is being collected from all municipalities in the state. So far no indication of a recurrence of influenza in epidemic form has been shown by the reports. This is precautionary, but the officials are not expecting a marked recurrence this year.

Nearly 20,000 bacteriological examinations were made by the laboratories of the State Department of Health for Ohio physicians during the year which ended June 30, according to the annual report of the laboratories, which has just been compiled. Examinations for the diagnosis of suspected cases of disease are made free for physicians who comply with the rules of the department as to methods of packing and mailing specimens. Diseases included in the scope of the laboratories' work are: tuberculosis, diphtheria, typhoid fever, malaria, rabies, syphilis and gonorrhea. A pamphlet issued for distribution to physicians gives full information regarding the laboratories.

Reports to the State Department of Health indicate that typhoid fever was less prevalent in Ohio during the past summer than ever before in the state's history. The total of reported typhoid cases from January 1 to October 1 is 1,700. During the corresponding months last year 2,387 cases were reported, and the average of the past five years for this period is 2,956 cases. Most of this year's typhoid cases came, as usual, in the summer months, the highest point being reached in September. A gradual decrease, extending until next March, will now take place if the normal typhoid trend is followed.

Reports from the Ohio tuberculosis hospitals present a picture of the activity in this field in the state. A bond issue of $20,000 was passed by the Montgomery and Preble County Commissioners of Montgomery County to be used in the erection of a new hospital building and to improve the grounds and remodel the present buildings at the Dayton District Tuberculosis Hospital. The present capacity is 42 patients and the bond issue will provide an increase in capacity to 75 patients. The annual report of the Dayton District Tuberculosis Hospital showed the average per capita cost for the year (April 1, 1918 to April 1, 1919) was $1.79 per day. The total number of patients receiving treatment during the year was 103. The cost per patient per day at the Springfield District Tuberculosis Hospital is reported by Dr. R. R. Richison, medical superintendent, to be $1.56 The Mt. Logan (Chillicothe) District Sanatorium, the latest addition to the tuberculosis hospitals in the state now, has 19 patients.

Following is the status of various proposed tuberculosis hospitals and sanatoria in Ohio: In Cuyahoga County ten new tuberculosis cottages at a total cost of $400,000 are to be added to the Warrensville Tuberculosis Sanatorium. In District No. 7, Belmont, Carroll, Harrison, Jefferson and Tuscarawas counties, action has been deferred for one year. In District No. 2 (Crawford, Hancock, Seneca, Wood and Wyandot Counties) a temporary organization of a joint board of County Commissioners of Seneca, Wood and Sandusky counties has been effected, looking to the immediate establishment of a district tuberculosis hospital. In District No. 6, three meetings have been held during the summer without action.

Rhode Island.—The fifth annual New England Tuberculosis Conference met in Providence, R. I., on October 16 and 17 with Dr. Charles V. Chapin in the chair. The program for progressive anti-tuberculosis work in New England as adopted by the conference includes: (1) Periodic physical examination of as many children and adults in a community as possible. (2) Greater emphasis on all environmental factors in the cause and cure of tuberculosis. (3) Heartier coöperation between public and private health agencies, and the fostering of the belief that there will always be a very important place and duty for private health agencies. (4) Stimulation of intensive instruction in tuberculosis for physicians, and the encouragement of an adequate community consultation service. (5) More thorough training for medical students and nurses in clinical tuberculosis. (6) Encouragement of the so-called "health center" movement. (7) Greater concentration of effort on the health and welfare of the child and child life, including an extension in the ideals to be reached through the modern health crusade. (8) Whole-hearted and whole-pocketed support of the national Red Cross Seal campaign. (9) Continued stimulation of public health nursing in general and tuberculosis nursing in particular.

Methods urged for educating the people of New England in the promotion of health and the curbing of tuberculosis include paid advertising, use of churches, new types of exhibits and community work in every city and town.

Dr. C.-E. A. Winslow of Yale University expressed as his opinion that "at a not distant day health centers will be scattered about the city just as schools are today—just as big and just as well-equipped. The great and coming thing is the health center—and the public health nurse."

Dr. Edward O. Otis of the Tufts College Medical School outlined a tuberculosis program: (1) education of the public in preventing tuberculosis; (2) physical examinations for all industrial employees; (3) discovery of all cases of tuberculosis; (4) opportunity for diagnosis of all suspects; (5) provision of sanatoriums and hospitals; (6) follow-up of those discharged; (7) open-air schools; (8) constant supervision by trained nurses of consumptives who remain at home; (9) dispensaries in all communities; (10) advice to arrested cases.

Dr. Allen K. Krause, editor of the *American Review of Tuberculosis*, urged municipal milk systems and the abolition of the private sale of milk as means by which tuberculosis can be reduced in this country. "Make your loudest demands for municipal milk supplies that are regulated basically like city water supplies. Pasteurize the milk as you filter the water." He said further that in spite of the anti-spitting laws, children playing on the highways are continually infected by sputum and that human sputum on our streets must go.

Dr. Donald B. Armstrong, assistant secretary of the National Tuberculosis Association, stated that the city of Framingham, Mass., is spending nearly $1.00 per capita for public health work annually whereas heretofore it only spent in the neighborhood of 39 cents. He said that out of a population of 17,000 nearly 12,000 have been examined.

The following committee was elected to make arrangements for the next annual convention in New England: Dr. R. Morton Smith of Providence; Dr. Stephen J. Maher of New Haven, Conn.; Dr. Edward O. Otis of Boston; Charles Tuxbury of Windsor, Vt.; Mrs. Frank Knox of Manchester, N. H.; and Dr. T. E. Hardy of Waterville, Me.

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Texas.—The State Health Department comes into line with a new publication, the *Texas Health Magazine*, official organ of the Department. Its general appearance is very suggestive of that superb bulletin, *Public Health*, of the Michigan State Board. There is perhaps no quicker way in which to set forth the desire of Dr. C. W. Goddard and his associates, than to present the page which sets forth the program. Here it is:

The Health Department of Texas Wants:

To reach every home in Texas and educate the parents how to conserve their own health and that of their children.

To enlighten the minds of the children to the extent that they will become interested in sanitation and personal hygiene, and form habits of health and hygiene while their minds are yet plastic.

To reduce the heavy death rate among infants and children and reclaim them for lives of usefulness and happiness.

To furnish free eye prophylactic remedies for use in the eyes of new-born babies, and make the use of same compulsory.

To supply antitoxin, typhoid prophylactic, and smallpox vaccine free to all who are in need of same and not able to pay.

To have all school children examined for physical defects, and contagious and infectious diseases, and reports sent to parents with request that they call on their family physician and secure advice and treatment.

To see an *all-time* health officer and *public health nurse* employed in every county in the state.

To establish laboratories in eight or ten different sections of the state where Pasteur treatment may be secured without cost and all specimens submitted be examined free.

To know that every baby's birth has been properly registered with the State Registrar of Vital Statistics at Austin.

To get doctors to give prompt attention to the registering of all births and deaths and reporting of contagious and infectious diseases.

To raise the physical standard of health and efficiency and reduce the death and disability rate in Texas.

To be of real service to the people of Texas and build up a health department second to none.

The people are entitled to all of the above, and *it can be secured* by the *united and continuous action of all the people. Won't you promise us your support?*

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Texas.—Senior Surgeon J. H. White, and Consulting Engineer N. V. Perry of the U. S. Public Health Service, in company with Dr. C. W. Goddard, state health officer, Hon. C. M. Cureton, attorney general for the State of Texas, and Mr. V. M. Ehlers, sanitary engineer of the State Board of Health, have recently completed an investigation of all the property owned by the State of Texas along the Gulf Coast and the Texas-Mexican border used for quarantine purposes. After the inspection the two commissions agreed upon values and terms of transfer. By this act the State of Texas, on September 1, transferred all state quarantine activities along the Gulf Coast and the Texas-Mexican border to the U. S. Public Health Service.

Mrs. Ethel Parsons, for the past year director Bureau of Public Health Nursing, Southwestern Division, American Red Cross, accepted the appointment from the State Board of Health as field director of the Bureau of Child Hygiene, and entered upon her duties September 1. The Bureau of Child Hygiene is a new division in the State Health Department, having been created in April, and receiving appropriations for the next biennium from the Legislature which adjourned in July.

Dr. C. W. Goddard, state health officer, has prepared plans for a model hospital of medium size and cost, and has submitted same to the various counties of the state that are contemplating the erection of a memorial hospital. Several counties have already provided for the erection of such hospitals and have adopted the plan submitted by Dr. Goddard.

Drs. R. L. Howell and Douglas Largen have completed the indexical health survey work being conducted by the state.

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Wisconsin.—Two new divisions in the Wisconsin State Board of Health, authorized by the last legislature, have been organized. That on child welfare will be directed by Mrs. H. H. Morgan, Madison, formerly the woman member of the State Council of Defense. The division of sanitary engineering is in full operation. As chief sanitary engineer the board named C. M. Baker, who was assistant sanitary engineer of the New York State Department of Health for four years and later sanitary engineer with the United States Public Health Service at Nashville, Tenn.

INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASE

Abstracted by Drs. E. R. Hayhurst, R. P. Albaugh and P. M. Holmes.

Concrete Value of Physical Examinations.—The establishment, citing its experience, requests that its name be withheld. The physical examinations were conducted under the supervision of the Life Extension Institute and began in May, 1915. It was of optional type (70 per cent of the workers made use of it). Later it was made compulsory for new employees. Examinations were repeated in the three succeeding years. Out of 599 examined, only 5 were found to be normal; 594 required advice regarding their living habits or physical condition; 377 were directed to a physician, and of these latter, 317 were not aware of any impairment whatsoever. The employees who by investigation were carrying out instructions numbered 361; those carrying them out partially, 66; those making plans to do so, 12; those who had done nothing, 160. Hence 439 of the employees have, or will have been, benefited. Poor eye-sight, teeth, heart disease, and incipient tuberculosis are particularly mentioned. The expense is considerable, but as a business proposition it has paid. Before putting such a proposition up to the employees, they should first be thoroughly acquainted with the principles of the idea and the ultimate aim, thus to avoid opposition. That labor turnover, which is due to the desire to get another job, is not believed to be influenced.—*Modern Hospital*, July, 1919.

Government Regulations to Prevent Anthrax.—The Department of Agriculture and the Treasury Department issued a joint order, effective January 1, 1918, giving regulations governing the sanitary handling and control of hides, sheepskins, goatskins and other animal by-products offered for entry into the United States. Some of the regulations are printed in full.—Labor Review, *U. S. B. of L. S.*, Vol. IX, No. 1, July, 1919, pp. 180–184.

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Medical Inspection of Factory Employees.—The physician with a woman physician assistant devotes two hours each day to the observation of 3,000 employees. A physical examination and health inquiry is made of each new applicant for work. Most of the examination and inquiry is completed by the nurse who refers all obvious defects to the physicians. No persons are given work in any part of the factory unless they are physically fitted for such positions. Four afflictions prohibit employment: mental defect, epilepsy, acute venereal disease, and active tuberculosis. In the last year 137 persons with organic heart disease have been accepted. They are placed at light work and seldom given piece work, for this causes a nervous tension and affects the heart action. There were 263 employees belonging to tuberculosis families, and the nursing service is directly concerned in getting these employees out of direct contact with the active case at home. Employees who are neither late to work not absent except for sickness receive a bonus of 10 per cent of their wages each month. The home work of industrial nurses has an inestimable value. The company has maintained a relief association for two years, protected by physical examinations. In one department it costs $100 to teach a new employee, yet before the compulsory examinations before employing, twenty-six employees had asked for transfer to other departments. The work was strenuous and required those especially fitted. Most rejections occur among women. Applicants who have defective eye-sight are about 25 per cent; teeth, 40 per cent; tonsils, 25 per cent; and probably half of the women give a history of menstrual troubles and nervous disturbances. Goiter was also unusually common. Venereal infection is the greatest problem in industry. While infected applicants can be rejected, how to discover those in the employ is of more importance than the tuberculosis problem. Work restrictions appear to offer the best solution. Foremen are instructed to send a memorandum to the hospital when any employee shows any evidence whatsoever of sickness. Under proper conditions, employees are given leaves of absence for recuperation. The writer warns against employees getting quack care in the matter of teeth and glasses. Workers must be educated how to spend their wages to the best advantage. They should demand of the physician a competent examination and should learn that physical disability is a matter of neglect and ignorance and not a dispensation of Providence.—Maynard A. Austin, *J. Ind. Hygiene*, Vol. I, No. 2, June, 1919, pp. 103–106.

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The After-Effects of Gas Poisoning.—Happily, there is reason to think that only a very small percentage of the surviving gas casualties of the war will suffer from any permanent disability. The principal afflictions are chronic bronchitis, bronchiectasis, and pronounced emphysema. There is polycythæmia and victims have asthma and night terrors. Predisposition to disease other than tuberculosis does not appear to have followed. Effects on the kidneys are rare. Mustard gas was the cause of the largest number of sequelæ. Various digestive disturbances may persist as may heart symptoms.—*British Medical Journal*, May 10, 1919, p. 586.

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Human Health and the American Engineer.—Only certain points in this article can be touched upon here. Whipple finds that no satisfactory definition of an engineer, especially a sanitary engineer, is at hand. He considers him one who is trained fundamentally in the science and art of engineering but who has also been taught the principles of public health. "Knowing the science of public health, he practices the art of the engineer." The great problem regarding industrial work is to make it efficient by a better planning of details. A uniform working day is illogical. The laborer should get a fair opportunity to build a home as home life determines contentment. Homes begin to vanish when cities become congested. Because the laborer has not received a fair share of satisfactions of life, he has insisted upon increased wages. This has often gone too far. When a carpenter, etc., gets more money for his work than the engineer who directs the work, when the laborer earns more than the bank clerk or teacher, it shows that money rewards are not being given in accordance with what people contribute to society. Such things have not brought contentment to the laborer or capitalist. The engineer has the opportunity to be a great social force in the new democracy as he is in touch with both labor and capital. The laborer wants health protective measures as a matter of custom and right and not as a matter of benevolence and patronage. Labor unions in this country are far behind those of England, which

appreciate the importance of healthful conditions of work far better. American skilled labor must adopt a broad-minded constructive policy or the pendulum will swing far toward proletariat control and then swing backward to autocratic conditions. The main theme needed is coöperation between all who have to do with human health.—George C. Whipple, *Jour. Ind. Hygiene*, Vol. I, No. 2, June, 1919, pp. 75–84.

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Poisons in American Industries.—Inorganic poisons other than lead are discussed from the historical and incidence points of view as they appertain to American industry. Items given special mention are zinc, copper, brass, arsenic, antimony, mercury, carbon disulphide, phosphorus, and carbon monoxide.—Alice Hamilton, *Jour. Ind. Hygiene*, Vol. I, No. 2, June, 1919, pp. 89–102.

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Prevention of Lead Poisoning in the Manufacture of Storage Batteries.—The writer describes the continuous monitor type of buildings occupied by the Willard Storage Battery Company of Cleveland. The outside walls are 50 per cent glass. The heating and ventilating systems give six complete changes of air per hour when apertures are closed. The visitor is at once impressed with the absence of any congestion of men or material. The big hazard, lead dust, is provided against by apparatus especially designed to control it. Suction devices, semi-automatic machinery in place of hand labor, automatic hoppers, etc., comprise the health appliances. For that great hazard, dust on the floors and benches in certain departments, after much experimenting, it was found that a solution of MgSO4 sprinkled on them had the power through its retention of moisture to hold down dust settlings. All refuse is kept in this non-dusty condition until it goes into the smelting furnace. Work rooms, rest periods, commissary department, the urging of milk drinking (at present it consists of 1½ pints per day for every employee in the plant), ample sanitary facilities and special clothing without extra charge are among the working features. On employment, each worker is given a book of instructions and regulations, which books are printed in all languages necessary. The notices governing "Instructions to Employees on How to Prevent Lead Poisoning," issued by the Ohio State Board of Health, are read to the employees every month. Foremen are especially trained to keep a constan watch on the health of employees. All applicants are physically examined and the workers are reëxamined at least once each month. All employees are given free medical attention, irrespective of the cause of illness. If employees are off one day for any reason, they must go through the medical department before they are allowed to resume work. Employees are transferred from a lead to a non-lead department on the first suspicious signs of trouble. Employees transferred are given the same rates they had been getting. Wood lays down four principles for eliminating the lead hazard from this industry. His paper is introduced by a complimentary letter from Alice Hamilton.—W. H. Wood, *Proceedings of the National Safety Council*, 168 N. Michigan Ave., Chicago, 1918, pp. 628–632.

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Dust in the Lungs in Man and Horse.—Both man and horse work in coal mines, yet veterinary authorities agree that pneumokoniosis (dust-in-lung-disease) is rare in horses, even in mine horses. The horse breaths through the nose which stops nearly all the dust. The author found in his coal mine investigations that there were no lung ailments among horses, they were hardly ever sick, and their average working life was thirteen years. Horses stabled on the stale air side of the ventilation in mines deteriorated some but regained their health on changing stables back to the intake air-way. In ganister mines the health of the animals was excellent although lung diseases had been common in human beings. While experimentally the horse can be given pulmonary tuberculosis and develop copious disease, their freedom from the same in normal life is probably due to exclusive nasal breathing. An analogy well known to laboratory workers is seen in the white rat. The writer has been struck with the frequency of wide atrophic nose conditions (useless as a dust-filter) occurring in human cases of lung-dust-disease and miners' phthisis.—W. C. Rivers, *Lancet*, London, July 12, 1919, pp. 55–56.

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British Railway Strike Due to Eye Test Demands.—The North-Eastern Railway Company employees struck as a protest to the eye-sight test laid down. The National Union of Railwaymen finally agreed with the company that the Board of Trade should speedily set up a national eye-sight test, the strike ending on this understanding. The article states that since the safety of the traveling public is involved, the matter is clearly one for a government department to arrange. Standard vision is by no means always associated with a good light sense; it is absolutely essential that an engineer be able to detect signal lights readily on a dark night. The lantern test with the necessary colored glass seems to be the best color test devised. A national eye-sight test for railwaymen is about to be established. Tobacco blindness should be sought for by examinations of certain of the employees at least every year.—*Lancet*, London, July 26, 1919, p. 160.

PUBLIC HEALTH LABORATORY NOTES

Abstracted by ARTHUR LEDERER, M. D.

Rapid Hemolytic Serum Production.—By the use of graded strengths of erythrocyte suspension, from 5 to 30 per cent, a saving in the mortality of rabbits used for the production of hemolytic serum by intravenous injection is effected over other methods in which higher concentrations are used. The use of these concentrations in the method gives a resulting serum of titer from 1: 3,000 up to 1: 7,000, which were higher titers than were obtained by other methods used. The titers obtainable with different antigens varied markedly. Thus sheep erythrocytes gave much higher titers than goat erythrocytes. The injection of human erythrocytes likewise did not give rise to so potent a serum as the injection of sheep erythrocytes.—Iyengar, *Ind. Jour. Med. Res.*, 6, 521 (1919); *Jour. A. M. A.*, 73, 793 (1919).

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Diphtheria Bacillus in Culture.—The growth of the diphtheria bacillus in culture is influenced by the hydrogen ion concentration of the medium. It is important, therefore, in adjusting culture media that the adjustment be made in terms of H-ion concentration. It has been shown that the diphtheria bacillus will develop on peptone broth of an initial reaction between PH 5.7 and 8.7, and that when growth is started it may pass either of these limits. For the most rapid development of the heaviest pellicle, an initial reaction of PH 7.3 to 7.5 is most favorable. The harvesting of strong toxins has taken place within a definite H-ion concentration range bounded approximately by PH 7.8 and PH 8.25. Reaction conditions alone cannot govern toxin production. Besides favorable reaction conditions it is necessary also that suitable food substances be present in the media. A peptic digest of meat having a content of polypeptides insoluble in 80 per cent alcohol but soluble in 50 per cent, similar to Witte peptone, has given favorable results over a period of two years.—John W. M. Bunker, *Jour. Bact.*, 4, 379 (1919).

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Loss of Complementary Power in Guinea-Pig Serum at Various Temperatures.—Sterile guinea-pig serum retains its complementary power for a longer time than is generally conceded. The rate of loss of complement in such serum is more rapid at first than later. The higher the temperature the more rapid is the loss of complementary power. At temperatures between 9° C. and 50° C. the rate of loss is regular and the complement is destroyed in accordance with a definite mathematical expression. —Joseph W. Bigger, *Jour. Path. Bact.* 22, 323 (1919).

⚜

Influence of Antigen Dilution on the Wassermann Reaction.—The turbidity of the antigen solution and the dilution of the antigen solution greatly influenced the results obtained with the Wassermann reaction with serums from syphilitic persons. For each antigen there seems to be an optimum turbidity and an optimum dilution. Antigen diluted too slowly or too rapidly lost in antigenic value. Alcoholic extract of human heart gave the strongest positive results in dilutions of 1 to 50, and alcoholic extract of beef heart and of rabbit heart gave the strongest positive results in dilutions of 1 to 100. With serums from non-syphilitic persons the results were uniformly negative.—E. H. Ruediger, *Jour. Inf. Dis.*, 25, 224 (1919).

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Serodiagnosis of Typhus.—Ribeyro reports that in the seven cases of typhus he has encountered, all the serums agglutinated the proteus X without exception, using a strain obtained from Paris. The range was from 1: 100 to 1: 10,000. Serum from guinea-pigs infected with typhus did not induce agglutination, and the tests were constantly negative with serum from nontyphus patients.—R. E. Ribeyro, *Cronica Medica* (*Lima*), 36, 158 (1919); *Jour. A. M. A.* 73, 728 (1919).

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Rapid Method of Preparing Antigens from Normal Heart Muscle.—Suitable antigens can be made by extracting normal heart tissues for a period from 1 to 3 hours with boiling alcohol in a reflex condenser. The value of these antigens compares favorably with those extracted by the usual methods. A primary extraction of the dried tissues with ether results in a slight loss of their fixing power, but yields extracts containing less anticomplementary substances.—E. E. Ecker and K. Sazano, *Jour, Inf. Dis.*, 25, 174 (1919).

⚜

The Absorption or Saturation Test of Castellani. —The author in a critical review discusses the application of the absorption test of Castellani and its application in sero-diagnosis and in the recognition of bacterial species. This method of absorption of agglutinins has opened up a wide field of investigation and promises to be extensively employed by serological and bacteriological workers in the future. —F. E. Taylor, *Jour. of Hygiene*, XVII, Oct., 1918, 415. (*D. G.*)